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CHICAGO BRIDGE & IRON WORKS





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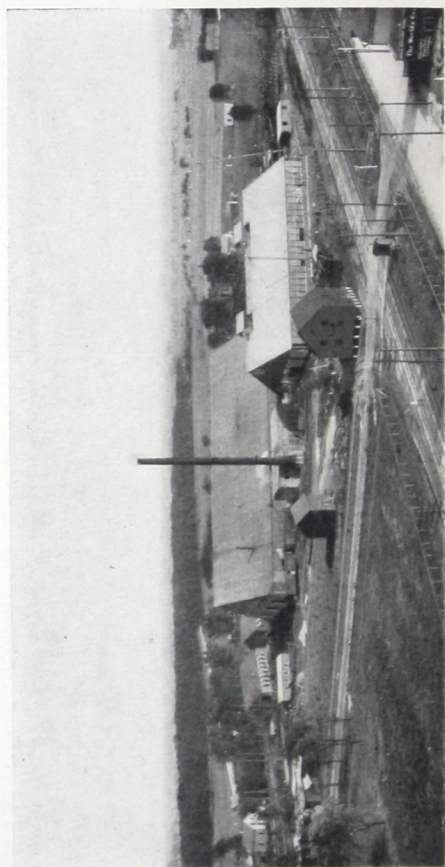
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CHICAGO BRIDGE AND IRON WORKS

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CHICAGO BRIDGE *and* IRON WORKS

Horace E. Horton proprietor

Engineers & Contractors for

Metal Structures



*Manufacturers & Builders of
Water Towers, Stand Pipes,
Smoke Stacks, Grain Tanks,
Bridges, Riveted Pipe,
Roof Trusses, Buildings,
Locomotive Turntables.*

Office & Works

THROOP & 105TH STREETS
CHICAGO Illinois U. S. A.

Metal Structures



LOUISVILLE, KY.

Capacity, 1,200,000 gallons Height, 220 feet

Louisville Water Co.

Standard design

Chicago Bridge & Iron Works

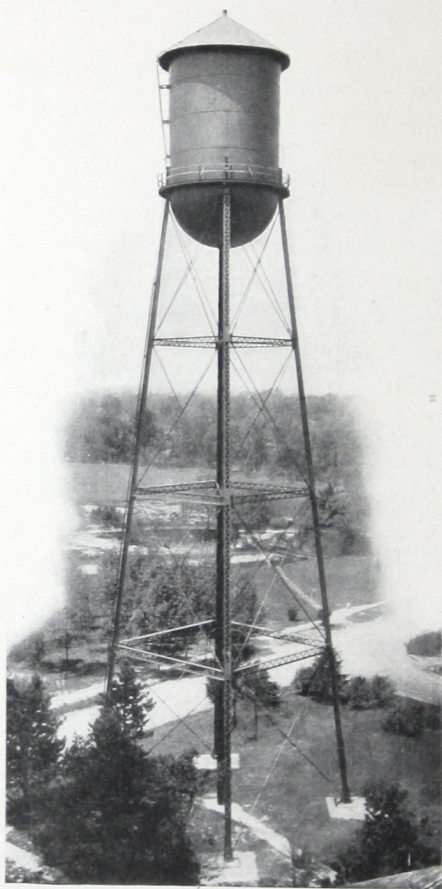


THE value of elevated tanks for water storage has long been recognized by all leading engineers and those familiar with the subject of water works design. As the task of determining which type of structure is best adapted to the needs of any individual community, or location, often devolves upon those having made no special study of this question, it is the object of this booklet—our seventh edition of *Metal Structures*—to point out, briefly, the advantages of the several types of steel tanks which we are manufacturing.

Nearly all the structures illustrated have been built since our last issue and represent the best and most advanced types of this line of construction.

The data and tables on the latter pages will be found useful in determining the size of tank and height of structure required.

Metal Structures



COLUMBUS, OHIO

Capacity, 100,000 gallons Height, 150 feet

Columbus State Hospital

Standard design

Chicago



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Chicago Bridge & Iron Works

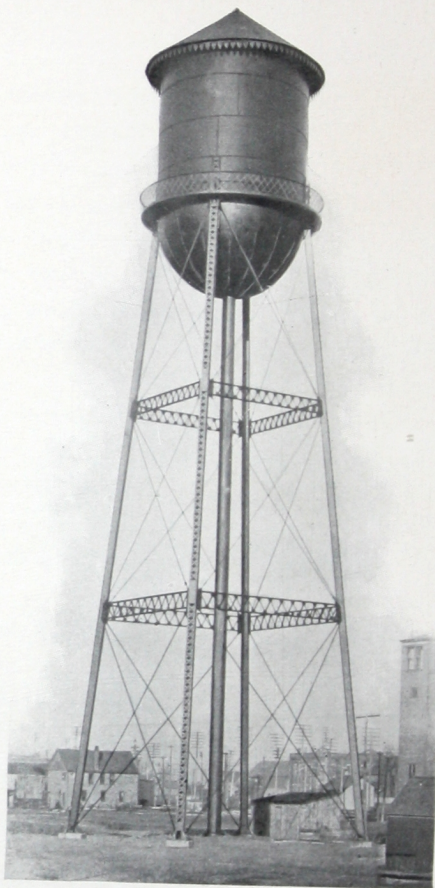


AN elevated reservoir is a necessity for the most satisfactory and economical operation of any water works plant. In this way a reserve supply for fire protection is always at hand, the pressure on the mains is high and uniform, and the cost of pumping is reduced to a minimum, as an inspection of the data on the following page will show.

Where this reservoir can be located on a natural elevation, a tank of large diameter and low height placed upon the ground is preferable; where no elevation can be reached at a reasonable cost, the steel tower and tank is the logical substitute.

In deciding which is the more desirable, account should be taken of the advantages of central location as well as the cost of laying the additional pipe usually required to reach the desired elevation.

Metal Structures



CHICAGO, ILL.
Capacity, 180,000 gallons Height, 145 feet
Washington Heights Pumping Station
City Water Works

Chicago



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Chicago Bridge & Iron Works



THE following figures show the cost of fuel for pumping at the Washington Heights Station of the Chicago Water Works for a period of five years, during which the plant was operated by direct pressure, and by pumping to an elevated reservoir.

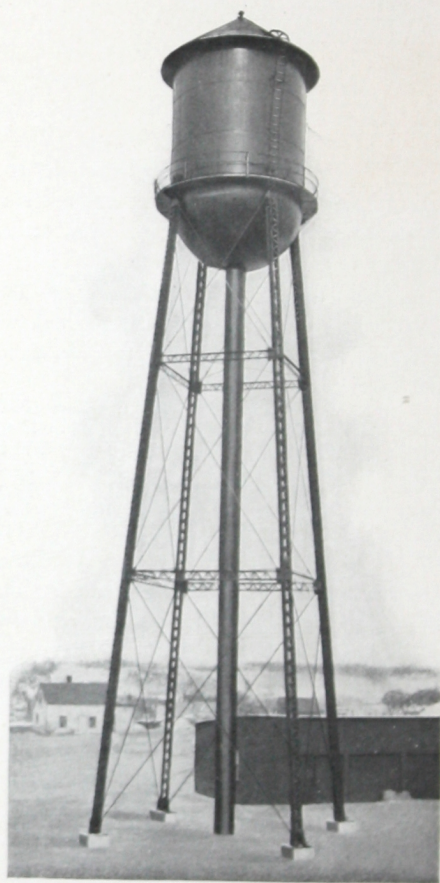
These figures show the saving in fuel alone accomplished by the latter method, the saving in wear and tear on the machinery and mains is inestimable.

Years	Million Gals. Pumped	Billion Foot Lbs.	Total Cost of Fuel	Cost per Billion Ft. Lbs.
1899	107.7	98	\$1453	\$14.82
1900	118.2	100	2345	23.45
1901	139.1	94	2852	30.50
1902	157.2	187	2028	10.84
1903	243.7	290	2508	8.65

Note: During 1899 and a portion of 1900 a wood tank was being used. This leaked so badly that it was abandoned and the system operated by direct pressure until January, 1902, when the steel tank illustrated opposite was put into service.

These figures were compiled from the monthly reports covering the entire period.

Metal Structures



TICONDEROGA, N. Y.

Capacity, 50,000 gallons

Height, 104 feet

International Paper Co.

Standard design

Chicago L



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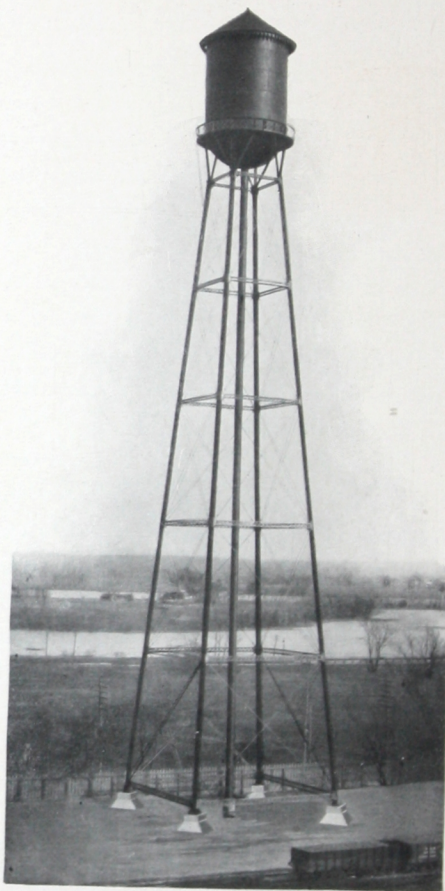
Chicago Bridge & Iron Works



THE first metal structures used for the storage of water were stand pipes, built of small diameter and having sufficient height to give the desired pressure when filled. These have always proven very unsatisfactory. The amount of serviceable water stored in such a tank is only a fraction of the total capacity, as it is well recognized that in a level town any water stored below an elevation of eighty feet is of little or no value for fire protection.

Several times as much water can always be stored above this height, for the same cost of structure, by using an elevated tank rather than a stand pipe. The tall stand pipe presents other obvious disadvantages in the matter of extreme variation of pressure which it gives between the two conditions of being full and empty.

Metal Structures



CAMDEN, N. J.

Capacity, 150,000 gallons Height, 242 feet

New York Shipbuilding Co.

Special design

Chicago L



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Chicago Bridge & Iron Works



CITIES and villages should be sure to get their tank large enough. There should be at all times enough water stored in reserve to furnish several fire streams and supply the domestic consumption when the pumps are not running. Thirty gallons per inhabitant, with a liberal allowance for increase, should be the minimum, and no tank for this service should have a less capacity than thirty thousand gallons.

Public and private institutions should make careful investigation of the amount of water they use and allow a large excess to give them proper fire protection.

The capacity and height of tanks for fire protection to factory buildings is generally prescribed by the insurance companies.

Metal Structures



WINNIPEG, MAN., CANADA

Capacity large tank, 125,000 gallons Height, 135 feet

Capacity small tank, 10,000 gallons

Canadian Pacific Ry.

Standard design

Chicago



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Chicago Bridge & Iron Works



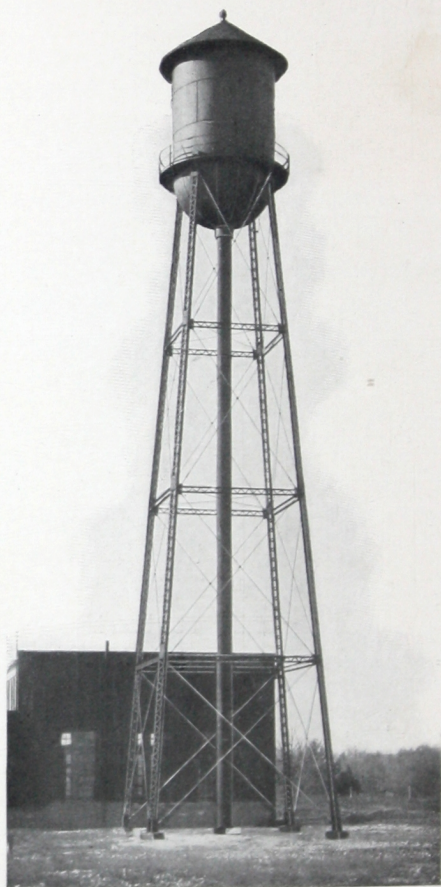
AS primary sources of supply to automatic sprinkler equipments our steel tanks are invaluable on account of their long life, small cost for maintenance and the fact that they are never in danger of bursting suddenly with attendant loss of life and property.

Having built a large number of structures for this purpose we are entirely familiar with the insurance companies' requirements for this class of work.

The illustration shows a new type of structure which we have developed, the larger tank being kept full of water for fire protection and the smaller suspended tank being used for domestic service in the buildings.

The smaller tank can be built in this way very economically.

Metal Structures



GALT, ONT., CANADA

Capacity, 30,000 gallons

Height, 114 feet

Goldie and McCulloch Co.

Standard design

Chicago



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Chicago Bridge & Iron Works

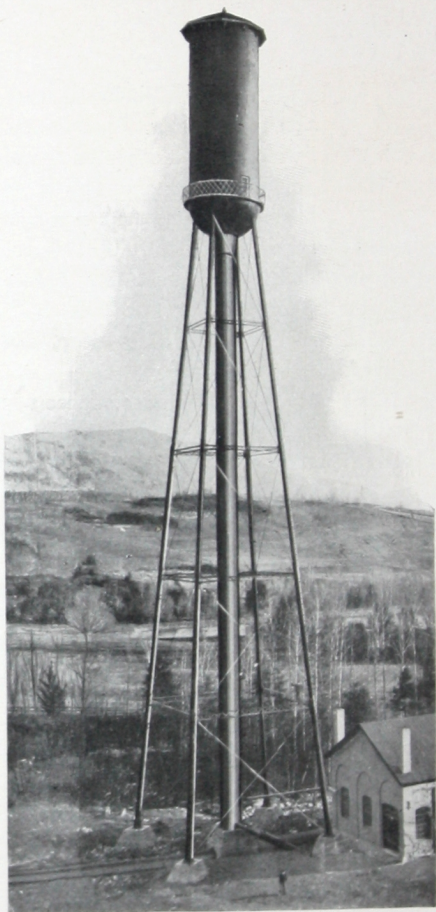


OUR tank at Louisville, illustrated on page four, has attracted widespread attention on account of its great size. This is the largest elevated tank ever built, having a capacity of 1,200,000 gallons and a height of 220 feet from top of foundations to top of tank. The tank is 50 feet in diameter and 90 feet deep, with 48" riveted steel riser pipe.

This structure is built in accordance with our standard specifications and in the same general proportions as our smaller standard designs, to which fact is due the utter failure of the photograph to convey an adequate impression of its dimensions.

This work illustrates the possibilities of the construction of similar tanks on very high towers for fire protection in the congested districts of our large cities. The advantages of such a structure are obvious, the only objection heretofore offered to this idea has been that their construction was impractical. We are prepared to construct tanks of much greater dimensions than the one referred to.

Metal Structures



NORTH RUTLAND, VT.

Capacity, 70,000 gallons.

Height, 220 feet

Chittenden Power Co.

Special design

Chicago



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Chicago Bridge & Iron Works

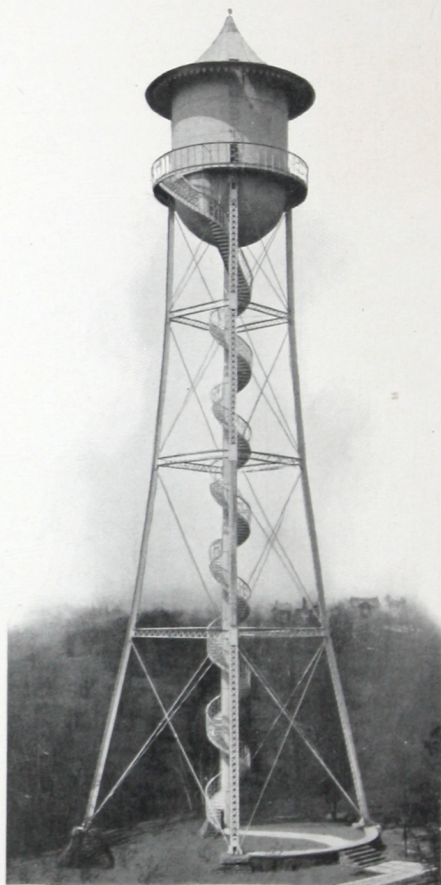


ON the opposite page is shown a water tower built in connection with a hydro-electric power development.

This structure is located at the power house and has a total height slightly greater than the hydraulic head at that point. The riser pipe is directly connected to the pipe line from the reservoir, so the water level is always within the tank. When one or more generators in the power station are quickly loaded the stored water in the tank is sufficient to prevent more than a very small drop in head. When the load at the station is suddenly reduced by a large amount, the surplus energy of the column of water 8,000 feet long that is flowing down from the reservoir, is expended into an overflow at the top of the tank. Surging in the pipe line is thus prevented and a constant pressure at the water wheels is maintained.

We have built several water towers for this purpose.

Metal Structures



COLLEGE HILL, OHIO

Capacity, 100,000 gallons Height, 154 feet

City Water Works

Special design

Chicago



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Chicago Bridge & Iron Works



WE are especially well prepared to undertake work which has to be designed to meet unusual conditions or requirements.

Being specialists in water tower design, we are at all times ready and willing to offer our advice, or to otherwise assist those in need of such a structure to formulate their requirements.

We can, of course, make much prompter deliveries when our standard designs are adhered to. These, the result of years of experience and careful study, will be found well adapted to almost every need.

The following illustrations give a fair idea of the general appearance of our standard water towers built in heights ranging from two to seven stories.

Metal Structures



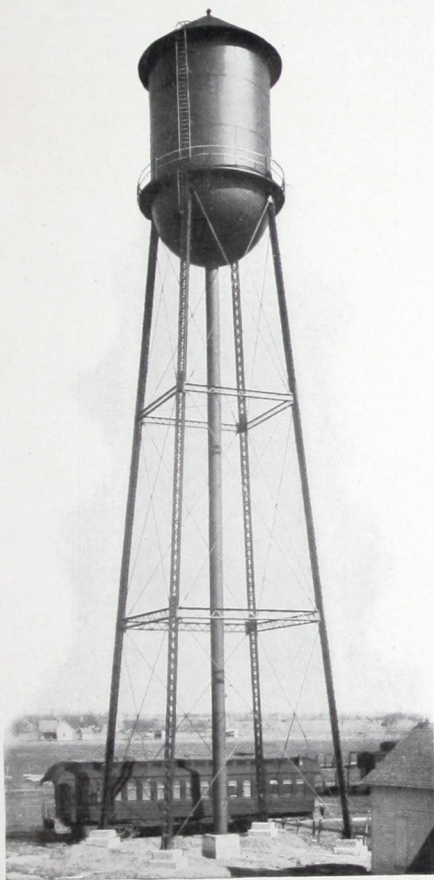
NORTH FT. WORTH, TEX.

Capacity, 100,000 gallons Height, 100 feet

City Water Works

Standard design

Chicago Bridge & Iron Works



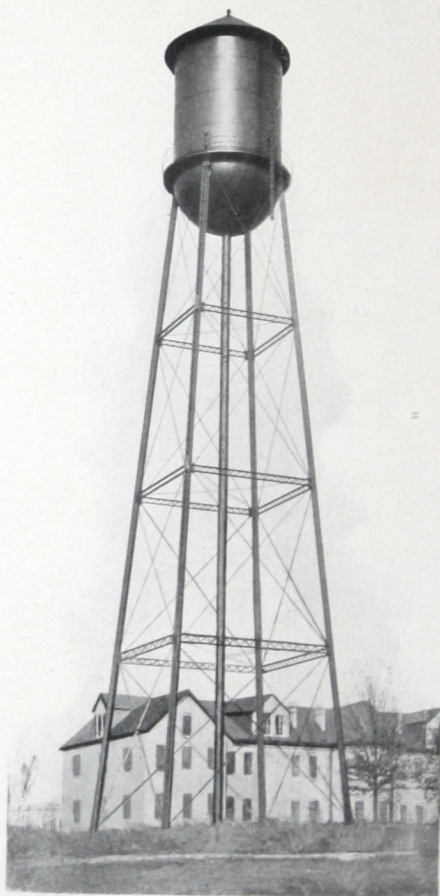
ST. ELMO, ILL.

Capacity, 60,000 gallons Height, 120 feet

City Water Works

Standard design

Metal Structures



LITTLE ROCK, ARK.

Capacity, 100,000 gallons Height, 159 feet
State Asylum

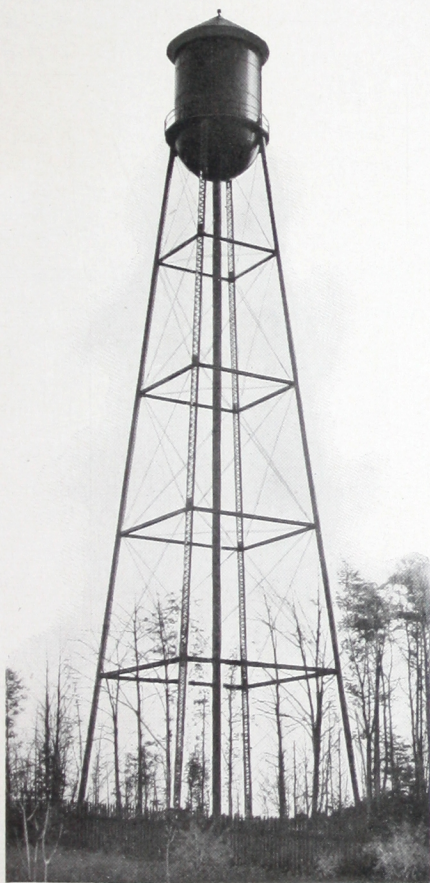
Standard design

Chicago

Capacity

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Chicago Bridge & Iron Works



TOCOMA PARK, MD.

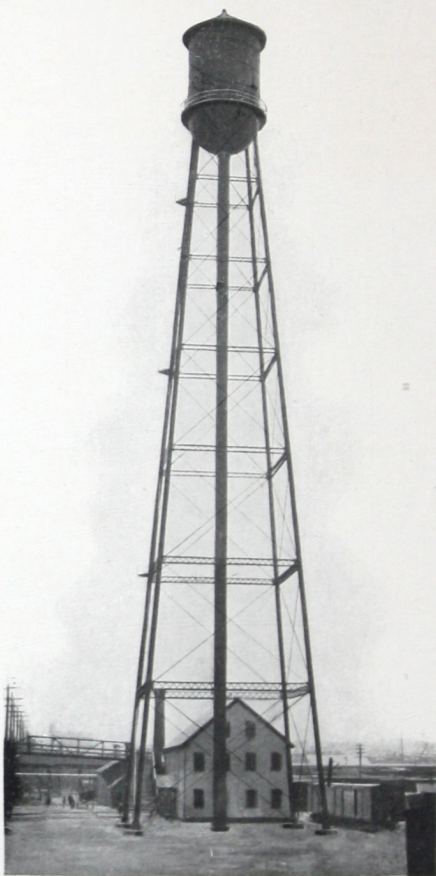
Capacity, 50,000 gallons

Height, 164 feet

City Water Works

Standard design

Metal Structures



BOSTON, MASS.

Capacity, 100,000 gallons

Height, 239 feet

Boston and Maine R. R.

Standard design

Chicago



grade of work
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drawings and
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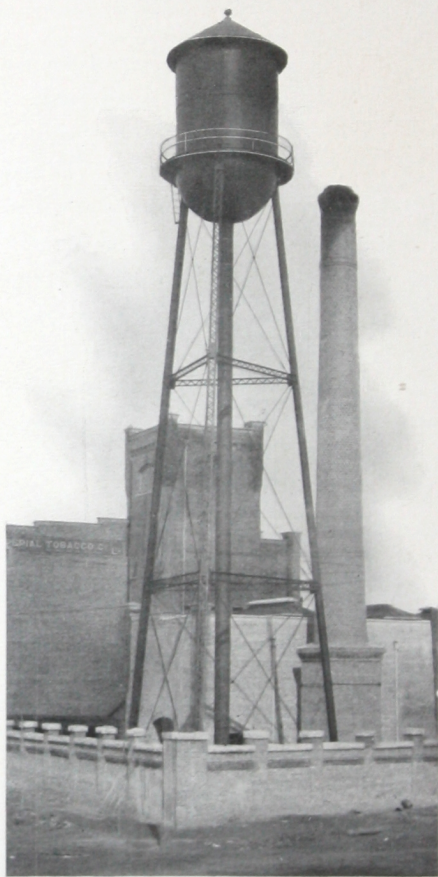
Chicago Bridge & Iron Works



WE designed and erected the first hemispherical bottom tank of the type shown in the foregoing illustrations in 1894. The high grade of work we are now doing is the result of twelve years of experiments and improvements along these same lines. We now have drawings and templets on hand for almost every size of structure, which enables us to make the promptest shipments and insures an absolute fit of all connections. Our organization for handling this work is such that poor workmanship of any kind is practically impossible. We gladly refer to our past customers, shown in the list commencing on page 49, with confidence that all would speak of our work in highest terms.

The two following illustrations show designs which are most economical for tanks of small capacity.

Metal Structures



WILSON, N. C.

Capacity, 25,000 gallons

Height, 100 feet

Imperial Tobacco Co.

Standard design with three posts

Chicago

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Chicago Bridge & Iron Works



SUMMIT, ILL.

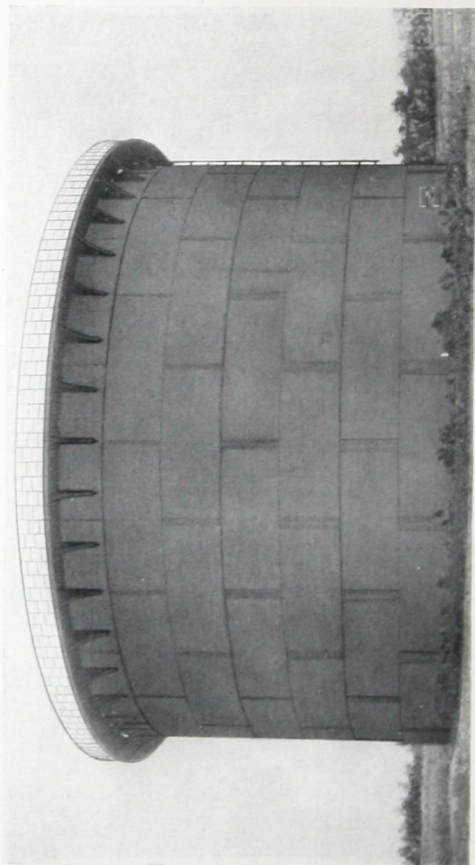
Capacity, 5,000 gallons

Height, 46 feet

Resurrection Cemetery

Standard design

Metal Structures



SCHEENECTADY, N. Y.

Capacity, 2,380,000 gallons

Diameter, 90 feet. Height, 50 feet

City Water Works



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Chicago Bridge & Iron Works



HERE a tank can be located upon a natural elevation the most economical form is to make the diameter ten to twenty per cent greater than the height. In no case should the height exceed sixty or seventy feet.

There have been a great many failures of stand pipes recorded, the majority of which are traceable to weakly riveted joints. We wish to call attention to the tables on riveted joints, pages 44 to 48, which have been prepared especially for tank and stand pipe work. All other published tables as far as we know have been designed for boiler work, which must be made tight against high steam pressure and which makes the character of joint required entirely different from that needed in a tank.

SCHENECTADY, N. Y. Diameter, 90 feet. Height, 50 feet
City Water Works

Capacity, 2,380,000 gallons

Metal Structures



MENDENHALL, MISS.
Capacity, 50,000 gallons
Gulf and Ship Island R. R.

Standard design

ires

Chicago Bridge & Iron Works



EAST WINONA, WIS.

Capacity, 100,000 gallons

Chicago, Burlington and Quincy Ry.

Standard design

nd design

Metal Structures



LOCK HAVEN, ILL.
Capacity, 60,000 gallons
Chicago, Peoria and St. Louis Ry.

Standard design

Chicago



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Chicago Bridge & Iron Works



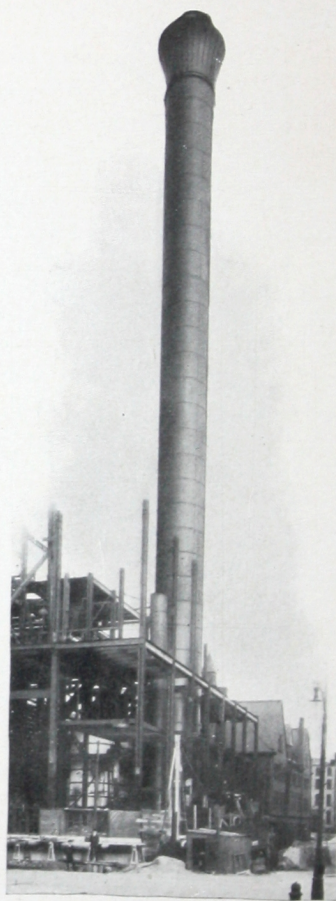
STEEL tanks are being adopted very rapidly by the railroads. Unlike wood tanks, they do not leak, rot out, burst or burn, and the expense of maintenance is much less. It will be but a few years until the wooden tank will be as obsolete as the wooden bridge for railway use.

Our standard railway tanks, on account of the economy effected in their design, cost little if any more than a wood tank on a steel trestle.

The riser pipe is built of sufficient size to prevent freezing in the coldest weather. This removes the necessity of wooden frost casing, and puts the tank in the class of permanent structures.

This pipe is also designed to act as a settling basin for sediment, which may be drawn off through the blow-off valve in the bottom without emptying the tank.

Metal Structures



DETROIT, MICH.

Diameter, 14'-6"

Height, 242 feet

Murphy Power Co.

Chicago



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plaster.

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HEIGHT OF

Diam. in.	50	60
18	23	25
21	35	38
24	49	54
27	65	72
30	84	92
33	115	125
36	141	152
39	171	182
42	204	216
48	270	288
54	330	352
60	396	420
66	462	492
72	528	564
78	594	636
84	660	708
90	726	780
96	792	852
108	924	996
120	1080	1152

REDUCTION

Total length of fl

Chimney Dr'n in

Chicago Bridge & Iron Works



WE design and construct self-supporting steel smoke stacks of any size. We recommend in all cases that they be lined for a distance of thirty or forty feet above the britchen connection with fire brick, and above that with common brick or cement plaster.

The following table shows the size of chimney necessary for a given boiler rating:

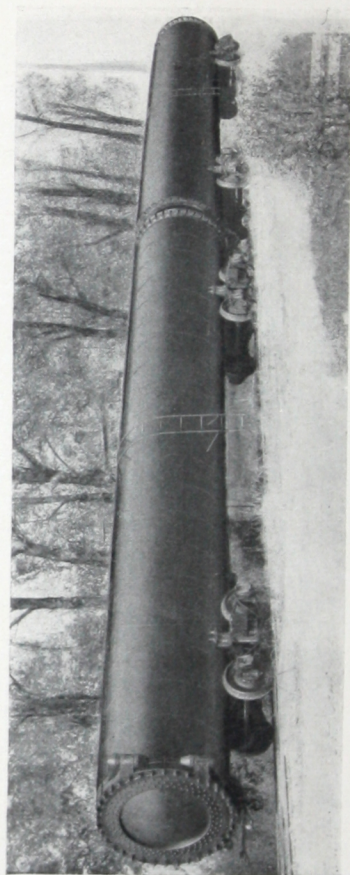
HEIGHT OF CHIMNEYS IN FEET—COMMERCIAL HORSE POWER

Diam. in in.	50	60	70	80	90	100	110	125	150	175	200
18	23	25	27	...	...	...	...	...	...	...	...
21	35	38	41	...	...	...	...	...	...	...	...
24	49	54	58	62	...	...	...	...	...	...	...
27	65	72	78	83	...	...	...	...	...	...	...
30	84	92	100	107	113	...	...	...	...	...	...
33	...	115	125	133	141	...	...	...	...	...	...
36	...	141	152	163	173	182	...	...	...	...	...
39	...	...	183	196	208	219	...	...	...	...	...
42	...	...	216	231	245	258	271	294	318	341	364
48	...	...	...	311	330	348	365	389	428	459	491
54	...	...	...	363	427	449	472	503	551	594	635
60	...	...	...	505	539	565	593	632	692	748	797
66	...	...	...	...	658	694	728	776	849	918	981
72	...	...	...	...	792	835	876	934	1023	1105	1181
78	...	...	...	...	...	995	1038	1107	1212	1310	1400
84	...	...	...	...	...	1163	1214	1294	1418	1531	1637
90	...	...	...	...	...	1344	1415	1496	1639	1770	1893
96	...	...	...	...	...	1537	1616	1720	1876	2027	2167
108	...	...	...	...	...	...	...	...	2290	2470	2637
120	...	...	...	...	...	...	...	...	2827	3049	3255

REDUCTION OF CHIMNEY DRAFT BY LONG FLUES

Total length of flues in ft	50	100	200	400	600	800	1000	2000
Chimney Dr't in per cent	100	93	79	66	58	52	48	35

Metal Structures

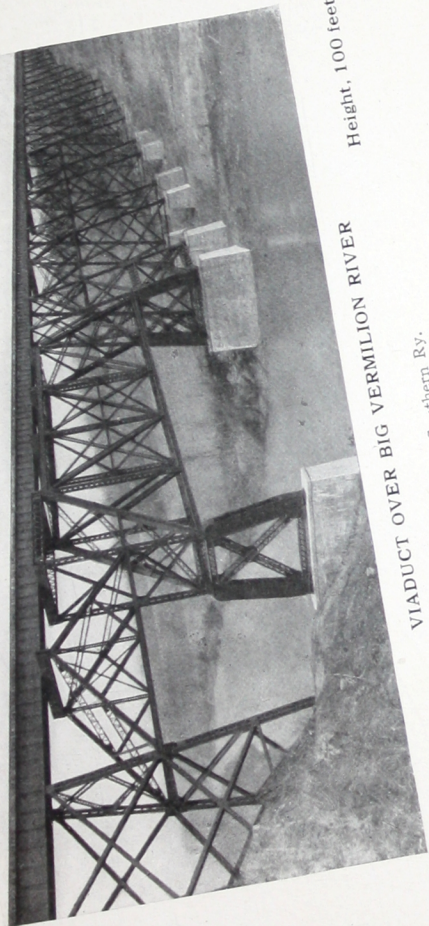


PORTABLE TIE PRESERVING RETORT

Diameter, 6 feet

Length, 130 feet

Union Pacific R. R. Co.



Height, 100 feet

VIADUCT OVER BIG VERMILION RIVER

Chicago Southern Ry.

Length, 1600 feet

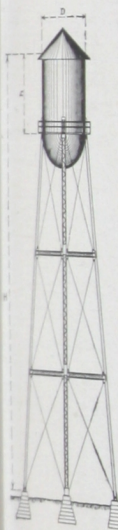
Metal Structures

Table showing Capacity in Gallons per
Lineal Foot of Cylinders

Diameter	Capacity	Diameter	Capacity
1	5.9	51	15281
2	23.5	52	15887
3	52.9	53	16503
4	94	54	17132
5	146.9	55	17772
6	211.5	56	18425
7	287.9	57	19089
8	376	58	19764
9	475.9	59	20452
10	587.5	60	21151
11	711	61	21862
12	846	62	22584
13	993	63	23319
14	1152	64	24065
15	1322	65	24823
16	1504	66	25592
17	1698	67	26374
18	1904	68	27167
19	2121	69	27972
20	2350	70	28788
21	2591	71	29617
22	2844	72	30457
23	3108	73	31309
24	3384	74	32173
25	3672	75	33048
26	3972	76	33935
27	4283	77	34834
28	4606	78	35745
29	4941	79	36667
30	5288	80	37601
31	5646	81	38547
32	6016	82	39505
33	6398	83	40474
34	6792	84	41455
35	7197	85	42488
36	7614	86	43453
37	8043	87	44469
38	8484	88	45498
39	8936	89	46537
40	9400	90	47589
41	9876	91	48653
42	10364	92	49727
43	10863	93	50815
44	11374	94	51913
45	11897	95	53024
46	12432	96	54146
47	12978	97	55280
48	13536	98	56425
49	14106	99	57583
50	14688	100	58752

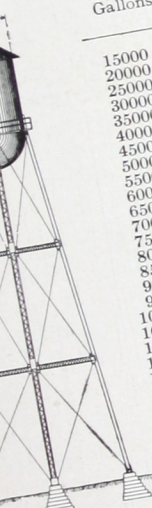
Chicago L

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We have stock m
Rule for finding
Diagonal
Square =

Dimensions of our Standard
Tanks, for which we have
Drawings and Tem-
plates on hand



Capacity Gallons	Diameter Feet D	Height Feet h	Width of Balcony Inches
15000	12	14	18
20000	13	16	18
25000	14	17	18
30000	15	18	24
35000	16	18	24
40000	17	18	24
45000	17	21	24
50000	18	20	24
55000	18	23	24
60000	19	22	24
65000	20	24	24
70000	20	25	24
75000	21	23	27
80000	21	24	27
85000	21	26	27
90000	22	28	27
95000	22	26	27
100000	23	28	30
105000	23	26	30
110000	24	28	30
115000	24	29	30
120000	24	27	30
125000	25	30	30
130000	25	33	36
140000	25	35	36
150000	26	35	36
175000	28	37	36
200000	30	40	
250000	32		
300000			

We have stock material for all sizes up to 100,000 gallons capacity.
Rule for finding size of base:
Diagonal = $D + .23 (H - h)$ } Closely
Square = $.71 D + .162 (H - h)$ } Approximate

Metal Structures



Thicknesses and Weights of Cast Iron Pipe

Nominal Inside Diam. Inches	100 FT. HEAD 43 LBS. PRESSURE			200 FT. HEAD 86 LBS. PRESSURE			300 FT. HEAD 130 LBS. PRESSURE		
	Thickness Inches	Weight per		Thickness Inches	Weight per		Thickness Inches	Weight per	
		Foot	Length		Foot	Length		Foot	Length
3	.39	14.5	175	.42	16.2	194	.45	17.1	205
4	.42	20.0	240	.45	21.7	260	.48	23.3	280
6	.44	30.8	370	.48	33.3	400	.51	35.8	430
8	.46	42.9	515	.51	47.5	570	.56	52.1	625
10	.50	57.1	685	.57	63.8	765	.62	70.8	850
12	.54	72.5	870	.62	82.1	985	.68	91.7	1100
14	.57	89.6	1075	.66	102.5	1230	.74	116.7	1400
16	.60	108.3	1300	.70	125.0	1500	.80	143.8	1725
18	.64	129.2	1550	.75	150.0	1800	.87	175.0	2100
20	.67	150.0	1800	.80	175.0	2100	.92	208.3	2500
24	.76	204.2	2450	.89	233.3	2800	1.04	279.2	3350
30	.88	291.7	3500	1.03	333.3	4000	1.20	400.0	4800
36	.99	391.7	4700	1.15	454.2	5450	1.36	545.8	6550
42	1.10	512.5	6150	1.28	591.7	7100	1.54	716.7	8600
48	1.26	666.7	8000	1.42	750.0	9000	1.71	908.3	10900
54	1.35	800.0	9600	1.55	933.3	11200	1.90	1141.7	13700
60	1.39	916.7	11000	1.67	1104.2	13250	2.00	1341.7	16100
72	1.62	1283.4	15400	1.95	1545.8	18550	2.39	1904.2	22850
84	1.72	1633.4	19600	2.22	2104.2	25250	...	...	...

Chicago L

Fire Stream I

This Table

Indicated Pressure Pounds at Nozzle	Best Fire Jet	
	Height Feet	Reach Feet
25	43	42
30	51	47
35	58	51
40	64	55
45	69	58
50	73	61
55	76	64
60	79	67
65	82	70
70	85	72
75	87	74
80	89	76
85	91	78
90	92	80
95	94	82
100	96	83

Fire Stream I

Indicated Pressure Pounds at Nozzle	Best Fire Jet	
	Height Feet	Reach Feet
25	44	44
30	52	50
35	59	55
40	65	59
45	70	63
50	75	67
55	80	71
60	83	74
65	86	77
70	88	79
75	90	81
80	92	83
85	94	85
90	96	87
95	98	89
100	99	90

Chicago Bridge & Iron Works

Iron Pipe

300 FT. HEAD
LBS. PRESSURE

Weight per
Foot Length

Weight per Foot	Length
17.1	205
23.3	280
35.8	430
52.1	625
70.8	850
91.7	1100
116.7	1400
143.8	1725
175.0	2100
208.3	2500
279.2	3350
400.0	4800
545.8	6550
716.7	8000
908.3	10900
1141.7	13700
1341.7	16100
1904.2	22850

Fire Stream Data for 1-Inch Smooth Nozzle

This Table also serves for 1½-Inch Ring Nozzle

Indicated Pressure Pounds	Best Fire Jet		Gallons per Minute	Height of Tower required to maintain Fire Streams as shown in columns 2 and 3 through 2½-inch Rubber Hose Lines mentioned					
	Height Feet	Reach Feet		50 Feet	100 Feet	200 Feet	300 Feet	400 Feet	500 Feet
25	43	42	147	67	71	82	94	106	117
30	51	47	161	77	84	99	113	126	140
35	58	51	174	92	102	117	131	147	163
40	64	55	186	106	115	133	151	168	186
45	69	58	198	119	129	149	170	191	209
50	73	61	208	131	142	165	188	211	234
55	76	64	218	145	158	181	207	232	257
60	79	67	228	158	172	200	226	253	280
65	82	70	237	172	186	216	246	273	303
70	85	72	246	184	200	232	264	294	327
75	87	74	255	197	216	248	282	317	349
80	89	76	263	211	230	264	300	338	372
85	91	78	274	226	243	282	319	359	398
90	92	80	279	237	257	298	338	379	420
95	94	82	287	250	271	314	359	400	444
100	96	83	295	264	287	331	377	420	467

Fire Stream Data for 1½-Inch Smooth Nozzle

Indicated Pressure Pounds at Nozzle	Best Fire Jet		Gallons per Minute	Height of Tower required to maintain Fire Streams as shown in columns 2 and 3 through 2½-inch Rubber Hose Lines mentioned.					
	Height Feet	Reach Feet		50 Feet	100 Feet	200 Feet	300 Feet	400 Feet	500 Feet
25	44	44	188	72	80	100	119	237	156
30	52	50	206	86	96	121	142	165	186
35	59	54	222	100	112	140	165	190	218
40	65	59	238	116	128	161	188	218	248
45	70	63	252	130	144	180	204	246	278
50	75	66	266	144	160	201	227	274	310
55	80	69	279	158	176	222	250	302	340
60	83	72	291	172	192	241	273	327	370
65	86	75	303	188	208	262	296	355	402
70	88	77	314	202	224	281	322	383	432
75	90	79	325	216	240	302	345	411	464
80	92	81	336	230	256	323	368	436	494
85	94	83	346	246	272	342	391	464	524
90	96	85	356	260	288	363	414	492	556
95	98	87	366	274	304	382	439	520	586
100	99	89	376	288	320	403	462	548	608

Metal Structures

Chicago Br

Table showing Properties of Lap Joints

Thick'n'ss of Plate	Number Rows	½-in. Rivets			¾-in. Rivets			¾-in. Rivets			¾-in. Rivets		
		Eff.	Pitch	Sec.	Eff.	Pitch	Sec.	Eff.	Pitch	Sec.	Eff.	Pitch	Sec.
1/4	1	393	150	098	490	188	122	500	225	125	...	...	...
	2	654	180	163	700	250	175	650	250	160	...	...	...
	3	739	239	185	...	...	...	...	...	...	...	...	...
9/32	1	349	150	098	435	188	122	500	225	140	500	263	140
	2	627	167	176	684	239	192	685	281	193	...	...	...
	3	714	220	200	733	281	206	...	...	...	...	...	...
5/16	1	314	150	098	392	188	122	471	225	147	500	263	156
	2	600	157	187	663	222	207	708	300	221	679	312	212
	3	692	204	216	746	296	233	...	...	...	...	...	...
1 1/8	1	286	150	098	356	188	122	428	225	207	500	263	172
	2	571	150	196	640	209	220	688	280	237	709	344	244
	3	673	191	230	727	276	250	745	344	256	...	...	...
	4	732	234	252	781	343	268	...	...	...	...	...	...
3/8	1	262	150	098	327	188	123	393	225	147	458	263	172
	2	523	150	196	615	198	231	669	264	251	707	340	265
	3	654	180	245	710	259	266	752	353	282	...	...	...
	4	714	220	268	767	320	288	...	...	...	...	...	...
1 3/8	1	241	150	098	301	188	122	363	225	147	423	263	172
	2	482	150	196	603	188	245	651	251	264	689	322	280
	3	635	171	258	693	245	282	737	332	299	...	...	...
	4	700	207	284	705	302	286	785	406	319	...	...	...
7/16	1	224	150	098	280	188	123	337	225	147	393	263	172
	2	449	150	196	561	188	245	634	239	277	671	303	294
	3	619	163	271	677	233	296	722	315	316	756	409	331
	4	683	197	299	738	285	323	776	390	340	...	...	...
1 5/8	1	...	...	...	262	188	123	314	225	147	366	263	172
	2	...	...	...	524	188	246	618	229	290	659	292	309
	3	...	...	...	663	222	311	708	300	332	742	389	348
	4	...	...	...	725	271	340	764	370	358	787	469	369
1 7/8	1	...	...	...	245	188	122	294	225	147	344	263	172
	2	...	...	...	491	188	245	589	225	294	644	280	322
	3	...	...	...	648	213	324	695	286	347	729	371	364
	4	...	...	...	711	259	355	752	353	376	783	461	391
1 9/8	1	...	...	...	232	188	123	277	225	147	323	263	172
	2	...	...	...	465	188	247	554	225	294	630	270	335
	3	...	...	...	633	205	336	682	275	362	718	355	381
	4	...	...	...	698	248	371	740	337	393	772	441	410
9/16	1	...	...	...	262	225	147	305	263	172	...	...	...
	2	...	...	...	524	225	295	611	263	344	...	...	...
	3	...	...	...	669	263	376	708	340	398	...	...	...
	4	...	...	...	729	322	410	762	421	429	...	...	...
1 1/2	1	...	...	...	248	225	147	288	263	171	...	...	...
	2	...	...	...	496	225	294	577	263	343	...	...	...
	3	...	...	...	657	255	390	695	327	413	...	...	...
	4	...	...	...	719	311	427	752	402	447	...	...	...
5/8	1	...	...	...	236	225	147	275	263	172	...	...	...
	2	...	...	...	471	225	294	550	263	344	...	...	...
	3	...	...	...	645	247	403	685	316	428	...	...	...
	4	...	...	...	708	300	443	742	389	464	...	...	...
2 1/8	1	...	...	...	224	225	147	262	263	172	...	...	...
	2	...	...	...	449	225	295	524	263	344	...	...	...
	3	...	...	...	634	239	416	671	303	440	...	...	...
	4	...	...	...	698	290	458	731	371	480	...	...	...
	5	...	...	...	743	340	488	772	439	507	...	...	...

Table showing

Thick'n'ss of Plate	Number Rows	½-in. Rivets		
		Eff.	Pitch	Sec.
1/4	1	...	...	...
	2	...	...	...
	3	...	...	...
9/32	1	...	...	...
	2	...	...	...
	3	...	...	...
	4	...	...	...
5/16	1	...	...	...
	2	...	...	...
	3	...	...	...
	4	...	...	...
1 1/8	1	...	...	...
	2	...	...	...
	3	...	...	...
	4	...	...	...
3/8	1	...	...	...
	2	...	...	...
	3	...	...	...
	4	...	...	...
1 3/8	1	...	...	...
	2	...	...	...
	3	...	...	...
	4	...	...	...
7/16	1	...	...	...
	2	...	...	...
	3	...	...	...
	4	...	...	...
1 5/8	1	...	...	...
	2	...	...	...
	3	...	...	...
	4	...	...	...
1 7/8	1	...	...	...
	2	...	...	...
	3	...	...	...
	4	...	...	...
1 9/8	1	...	...	...
	2	...	...	...
	3	...	...	...
	4	...	...	...
9/16	1	...	...	...
	2	...	...	...
	3	...	...	...
	4	...	...	...
1 1/2	1	...	...	...
	2	...	...	...
	3	...	...	...
	4	...	...	...
5/8	1	...	...	...
	2	...	...	...
	3	...	...	...
	4	...	...	...
2 1/8	1	...	...	...
	2	...	...	...
	3	...	...	...
	4	...	...	...
	5	...	...	...

Plates ¼ to ¾ inch
have been calculated
value of plate in tensio
rivet in bearing=150.
nominal diameter of riv
Thickness of plate a
with column. Under e
pitch of rivets and eff
Efficiency is given in
Pitch in inches.—De
Section in inches.—1

LAPS A

Rivets Center P

Chicago Bridge & Iron Works

Lap Joints

Table showing Properties of Lap Joints—Cont'd

Thickness of Plate	Number of Rows	1/2-in. Rivets			5/8-in. Rivets			3/4-in. Rivets			7/8-in. Rivets		
		Eff.	Pitch	Sec.	Eff.	Pitch	Sec.	Eff.	Pitch	Sec.	Eff.	Pitch	Sec.
1 1/16	1	...	...	...	...	...	...	214	225	147	250	263	172
	2	...	...	...	...	...	...	428	225	294	500	263	344
	3	...	...	...	...	...	...	623	232	428	662	297	455
	4	...	...	...	...	...	...	688	280	473	725	362	498
	5	...	...	...	...	...	...	734	328	505	766	428	527
2 3/32	1	...	...	...	...	...	...	205	225	147	239	263	172
	2	...	...	...	...	...	...	410	225	294	478	263	344
	3	...	...	...	...	...	...	613	226	441	654	288	470
	4	...	...	...	...	...	...	678	272	487	715	351	514
	5	...	...	...	...	...	...	725	318	521	758	414	545
3 1/4	1	...	...	...	...	...	...	196	225	147	229	263	172
	2	...	...	...	...	...	...	393	225	295	458	263	344
	3	...	...	...	...	...	...	589	225	442	644	280	483
	4	...	...	...	...	...	...	669	264	502	707	340	530
	5	...	...	...	...	...	...	716	308	537	751	400	563
2 5/16	1	...	...	...	...	...	...	189	225	148	220	263	172
	2	...	...	...	...	...	...	377	225	295	440	263	344
	3	...	...	...	...	...	...	566	225	442	635	273	496
	4	...	...	...	...	...	...	660	257	516	698	331	545
	5	...	...	...	...	...	...	708	300	553	742	389	580
1 3/16	1	...	...	...	...	...	...	181	225	147	211	263	171
	2	...	...	...	...	...	...	363	225	295	423	263	344
	3	...	...	...	...	...	...	544	225	442	624	267	507
	4	...	...	...	...	...	...	651	250	529	689	322	560
	5	...	...	...	...	...	...	700	291	569	734	378	596
2 7/32	1	...	...	...	...	...	...	174	225	147	204	263	172
	2	...	...	...	...	...	...	349	225	294	407	263	344
	3	...	...	...	...	...	...	523	225	441	611	263	516
	4	...	...	...	...	...	...	642	245	542	681	314	575
	5	...	...	...	...	...	...	692	284	584	728	367	614
7/8	1	...	...	...	...	...	...	168	225	147	196	263	172
	2	...	...	...	...	...	...	337	225	295	393	263	344
	3	...	...	...	...	...	...	505	225	442	589	263	515
	4	...	...	...	...	...	...	634	239	555	674	306	590
	5	...	...	...	...	...	...	684	277	599	720	358	630

Plates 1/4 to 3/8 inches thick; rivets, 1/2, 5/8, 3/4, 7/8. These tables have been calculated based on the following assumptions: If value of plate in tension=100, value of rivet in shear=75, value of rivet in bearing=150. Diameter of rivet hole 1/8 greater than nominal diameter of rivet.

Thickness of plate and number of rows of rivets driven given in left column. Under each rivet size are given efficiency of joint, pitch of rivets and effective section.

Efficiency is given in scale of 1000.

Pitch in inches.—Decimal point, two figures from the right.

Section in inches.—Decimal point, three figures from the right.

LAPS ARE MADE AS FOLLOWS.

Rivets	Center Rivet to Edge Plate	Spacing of Rivet Lines
1/2	1	1 1/2
5/8	1 1/8	1 3/4
3/4	1 1/4	2
7/8	1 1/2	2 1/2

Metal Structures



Table Giving Properties of Double Butt
Strapped Joints

Thick'ns of Plate	¾-inch Rivets				¾-inch Rivets				1-inch Rivets			
	Eff.	Pitch	Sec.	Strap	Eff.	Pitch	Sec.	Strap	Eff.	Pitch	Sec.	Strap
1 2	1 500	225	250	5½" x ⅞"	496	263	248	6½" x ⅞"	...	...	...	...
	2 720	313	360	9½" x ⅞"	724	362	362	11½" x ⅞"	...	...	...	...
	3 794	425	397	14½" x ⅞"	797	494	399	16½" x ⅞"	...	...	...	...
	4 837	538	419	22½" x ⅞"	840	625	420	25¼" x ⅞"	...	...	...	...
1 7 3 2	1 500	225	266	5½" x ⅞"	500	263	266	6½" x ⅞"	...	...	...	...
	2 720	313	383	9½" x ⅞"	724	362	385	11½" x ⅞"	...	...	...	...
	3 794	425	422	14½" x ⅞"	797	494	423	16½" x ⅞"	...	...	...	...
	4 837	538	445	22½" x ⅞"	840	625	445	25¼" x ⅞"	...	...	...	...
9 1 6	1 500	225	281	5½" x ⅞"	500	263	281	6½" x ⅞"	...	...	...	...
	2 720	313	405	9½" x ⅞"	724	362	407	11½" x ⅞"	...	...	...	...
	3 794	425	447	14½" x ⅞"	797	494	447	16½" x ⅞"	...	...	...	...
	4 837	538	471	22½" x ⅞"	840	625	473	25¼" x ⅞"	...	...	...	...
1 9 3 2	1 496	225	295	5½" x ⅞"	500	263	295	6½" x ⅞"	...	...	...	...
	2 718	311	426	9½" x ⅞"	724	362	430	11½" x ⅞"	...	...	...	...
	3 793	422	471	14½" x ⅞"	797	494	473	16½" x ⅞"	...	...	...	...
	4 837	533	497	21½" x ⅞"	840	625	500	25¼" x ⅞"	...	...	...	...
5 8	1 471	225	295	5½" x ⅞"	500	263	312	6½" x ⅞"	...	...	...	...
	2 707	299	442	9½" x ⅞"	724	362	453	11½" x ⅞"	...	...	...	...
	3 784	405	490	14½" x ⅞"	797	494	498	16½" x ⅞"	...	...	...	...
	4 829	511	518	21½" x ⅞"	840	625	525	25¼" x ⅞"	...	...	...	...
2 1 3 2	1 449	225	295	5½" x ⅞"	500	263	328	6½" x ⅞"	...	...	...	...
	2 698	289	458	9½" x ⅞"	724	362	475	11½" x ⅞"	...	...	...	...
	3 764	371	501	13½" x ⅞"	797	494	523	16½" x ⅞"	...	...	...	...
	4 822	491	540	20½" x ⅞"	840	625	552	25¼" x ⅞"	...	...	...	...
1 1 1 6	5 852	592	559	29½" x ⅞"	...	...	...	...	...	...	...	...
	1 428	225	295	5½" x ⅞"	500	263	344	6½" x ⅞"	...	...	...	...
	2 688	280	473	9½" x ⅞"	724	362	498	11½" x ⅞"	...	...	...	...
	3 767	376	527	13½" x ⅞"	797	494	548	16½" x ⅞"	...	...	...	...
2 3 3 2	4 815	473	560	19½" x ⅞"	840	625	578	25¼" x ⅞"	...	...	...	...
	5 846	569	582	28½" x ⅞"	...	...	...	...	...	...	...	...
	1 409	225	295	5½" x ⅞"	478	263	343	6½" x ⅞"	...	...	...	...
	2 678	272	487	9½" x ⅞"	715	351	514	11½" x ⅞"	...	...	...	...
3 4	3 759	364	546	13½" x ⅞"	790	476	568	16½" x ⅞"	...	...	...	...
	4 808	456	581	19½" x ⅞"	834	602	600	24½" x ⅞"	...	...	...	...
	5 840	548	604	27½" x ⅞"	...	...	...	...	...	...	...	...
	1 392	225	295	5½" x ⅞"	458	263	344	6½" x ⅞"	500	300	375	7½" x ⅞"
2 5 3 2	2 668	264	501	9½" x ⅞"	706	341	530	11½" x ⅞"	730	412	548	13½" x ⅞"
	3 751	352	564	13½" x ⅞"	783	461	587	16½" x ⅞"	800	562	600	19½" x ⅞"
	4 801	440	601	19½" x ⅞"	828	581	621	24½" x ⅞"	842	713	658	29¼" x ⅞"
	5 834	529	626	26½" x ⅞"	857	701	643	34½" x ⅞"	...	...	...	...
1 3 1 6	1 ...	...	...	...	440	263	344	6½" x ⅞"	500	300	391	7½" x ⅞"
	2 ...	...	...	...	698	331	545	11½" x ⅞"	730	412	570	13½" x ⅞"
	3 ...	...	...	...	776	446	606	16½" x ⅞"	800	562	625	19½" x ⅞"
	4 ...	...	...	...	819	552	640	23" x ⅞"	842	713	658	29¼" x ⅞"
1 3 1 6	5 ...	...	...	...	852	677	666	33½" x ⅞"	...	...	...	...
	1 ...	...	...	...	423	263	344	6½" x ⅞"	483	300	392	7½" x ⅞"
	2 ...	...	...	...	690	322	561	11½" x ⅞"	720	402	585	13½" x ⅞"
	3 ...	...	...	...	769	433	625	16½" x ⅞"	795	548	646	19½" x ⅞"
1 3 1 6	4 ...	...	...	...	816	544	663	23" x ⅞"	838	693	681	28½" x ⅞"
	5 ...	...	...	...	847	655	688	32½" x ⅞"	...	...	...	...

Chicago L

Table Giving
Stra

Thick'ns of Plate	¾-inch Rivets			
	Eff.	Pitch	Sec.	Strap
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98
99
100

1-inch Rivets

300	375	7½
412	548	13¼
562	600	19½
713	632	29¼
...
300	391	7½
412	570	13¼
562	625	19½
713	658	29¼
...
300	392	7½
402	585	13¼
548	646	19½
693	681	28½

Metal Structures

Table Giving Properties of Double Butt
Strapped Joints—Continued

Thick- ness of Plate	3/4-inch Rivets				7/8-inch Rivets				1-inch Rivets			
	Eff.	Pitch	Sec.	Strap	Eff.	Pitch	Sec.	Strap	Eff.	Pitch	Sec.	Strap
1 1/8	1	...	...	...	305	262	344	6 1/2 "x 5/8"	346	300	393	7 1/2 "x 5/8"
	2	...	...	...	610	262	688	11 1/2 "x 5/8"	650	322	731	13 1/2 "x 5/8"
	3	...	...	...	708	341	797	16 1/2 "x 5/8"	736	427	828	19 1/2 "x 5/8"
	4	...	...	...	762	421	857	21 1/2 "x 5/8"	788	531	886	25 1/2 "x 5/8"
	5	...	...	...	800	501	900	26 1/2 "x 5/8"	823	636	926	33 1/2 "x 5/8"
	6	...	...	...	828	581	932	36 1/2 "x 5/8"	...	...	...	...
1 5/8	1	...	...	...	297	263	344	6 1/2 "x 1 1/8"	339	300	393	7 1/2 "x 1 1/8"
	2	...	...	...	594	263	688	11 1/2 "x 1 1/8"	644	316	745	13 1/2 "x 1 1/8"
	3	...	...	...	700	334	810	16 1/2 "x 1 1/8"	731	418	845	19 1/2 "x 1 1/8"
	4	...	...	...	757	412	875	21 1/2 "x 1 1/8"	784	520	906	25 1/2 "x 1 1/8"
	5	...	...	...	796	491	920	26 1/2 "x 1 1/8"	819	621	947	32 1/2 "x 1 1/8"
	6	...	...	...	824	568	953	35 1/2 "x 1 1/8"	...	...	...	...
1 3/4	1	...	...	...	290	263	344	6 1/2 "x 1 1/4"	331	300	393	7 1/2 "x 1 1/4"
	2	...	...	...	580	263	688	11 1/2 "x 1 1/4"	638	311	758	13 1/2 "x 1 1/4"
	3	...	...	...	694	327	824	16 1/2 "x 1 1/4"	726	410	862	19 1/2 "x 1 1/4"
	4	...	...	...	752	404	893	21 1/2 "x 1 1/4"	779	509	925	25 1/2 "x 1 1/4"
	5	...	...	...	792	480	941	26 1/2 "x 1 1/4"	815	609	968	31 1/2 "x 1 1/4"
	6	...	...	...	820	556	974	34 "x 1 1/4"	841	707	992	42 1/2 "x 1 1/4"
1 7/8	1	...	...	...	282	262	344	6 1/2 "x 1 3/8"	322	300	393	7 1/2 "x 1 3/8"
	2	...	...	...	564	262	688	11 1/2 "x 1 3/8"	632	306	770	13 1/2 "x 1 3/8"
	3	...	...	...	690	322	842	16 1/2 "x 1 3/8"	721	403	879	19 1/2 "x 1 3/8"
	4	...	...	...	747	396	913	21 1/2 "x 1 3/8"	775	500	945	25 1/2 "x 1 3/8"
	5	...	...	...	787	470	959	26 1/2 "x 1 3/8"	811	596	988	31 1/2 "x 1 3/8"
	6	...	...	...	816	544	993	34 "x 1 3/8"	838	693	1021	42 1/2 "x 1 3/8"
1 1/4	1	...	...	...	275	262	344	6 1/2 "x 1 1/2"	314	300	393	7 1/2 "x 1 1/2"
	2	...	...	...	550	262	688	11 1/2 "x 1 1/2"	628	300	786	13 1/2 "x 1 1/2"
	3	...	...	...	684	317	855	16 1/2 "x 1 1/2"	714	394	893	19 1/2 "x 1 1/2"
	4	...	...	...	748	389	935	21 1/2 "x 1 1/2"	770	488	963	25 1/2 "x 1 1/2"
	5	...	...	...	783	461	979	26 1/2 "x 1 1/2"	807	583	1009	31 1/2 "x 1 1/2"
	6	...	...	...	812	533	1015	34 "x 1 1/2"	831	677	1039	41 1/4 "x 1 1/2"
7	...	...	...	...	835	605	1044	42 1/2 "x 1 1/2"	...	...	...	...

Chicago I

Detail List

This List is published
information by con

Locati

ALABAMA

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Greensboro—Light
Huntsville—Dallas
Carbon Hill
Whistler—Mobile &

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Hamburg—Crossett
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Helena—Premier C
Eau—Fourche Riv
Little Rock—State
Arkansas City
Thornton—Stout G

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Chico—Water Co.
Stockton—Water Co.
Sheridan—Am. Sm

COLORADO

Littleton
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Lafayette

CONNECTICUT

Bridgeport—Locon
Bridgeport—Eaton
Ham Co.
New Haven—Stro
Bridgeport—Union
Bridge Co.
Bridgeport—Bullar

able Butt

1-inch Rivets

Eff.	Pitch	Sec.	Str.
46	300	393	74
50	322	731	134
36	427	828	194
88	531	886	254
23	636	926	334
39	300	393	74
44	316	745	134
31	418	845	194
84	520	906	254
19	621	947	324
31	300	393	74
38	311	758	134
26	410	862	194
79	509	925	254
15	609	968	314
41	707	992	424
22	300	393	74
32	306	770	134
21	403	879	194
75	500	945	254
11	596	988	314
38	693	1021	424
14	300	393	74
28	300	786	134
14	394	893	194
70	488	963	254
07	583	1009	314
31	677	1039	414

Detail List of Elevated Tanks and Stand Pipes Built by Us

This List is published to aid prospective purchasers who can get information by corresponding with City Officials or Owners.

Location	Water Towers		Stand Pipes	
	Cap'y Gals.	Ht. Ft.	Dia. Ft.	Ht. Ft.
ALABAMA				
Huntsville—Lowe Manufact'ing Co.	30,000	90'6"		
Greensboro—Light & Water Co.	80,000	134'6"		
Huntsville—Dallas Mig. Co.	75,000	135		
Carbon Hill	80,000	60		
Whistler—Mobile & Ohio R. R. Co.	100,000	89		
ARIZONA				
Hackberry, U. S. A.			15	15
Fort Defiance, U. S. A.			12	12
ARKANSAS				
Siloam Springs	110,000	85		
Jonesboro			15	100
Marianna	60,000	131'6"		
Rogers	70,000	101		
Brinkley	50,000	100		
Baring Cross—St. L., I. M. & S. Ry.			25	50
Augusta	40,000	100		
Hamburg—Crossett Lumber Co.	45,000	100		
Little Rock—Traction Co.	63,000	66'6"		
Helena—Premier Cotton Mills	5,000	65		
Esau—Fourche River Lumber Co.	30,000	100		
Little Rock—State Asylum	100,000	159		
Arkansas City	40,000	99		
Thornton—Stout Greer Lum. Co.	50,000	104		
CALIFORNIA				
Porterville	75,000	133		
Chico—Water Co.	100,000	119		
Stockton—Water Co.	200,000	110		
Sheridan—Am. Smelt. & Refin. Co.	50,000	100		
COLORADO				
Littleton			15	75
New Windsor	50,000	80		
Lafayette			12	60
CONNECTICUT				
Bridgeport—Locomotive Co. of Am.	50,000	103		
Bridgeport—Eaton, Cole & Burnham Co.	100,000	139		
New Haven—Strouse Adler & Co.	40,000	110'6"		
Bridgeport—Union Metallic Cart-ridge Co.	100,000	128		
Bridgeport—Bullard Mach. Co.	50,000	129		

Metal Structures



Location	Water Towers		Stand Pipes	
	Cap'y Gals.	Ht. Ft.	Dia. Ft.	Ht. Ft.
FLORIDA				
Monticello.....	40,000	100		
Live Oak.....	45,000	103		
Pensacola.....	100,000	135		
Pensacola—B. H. Knowles.....	20,000	78'6"		
Perry.....	80,000	114		
Appalachicola.....	100,000	110		
GEORGIA				
Lytle—Camp George H. Thomas.....	30,000	55'6"		
Savannah—Savannah Lum. Co.....	30,000	90'6"		
Fitzgerald—Atlantic & Birmingham Construction Co.....	100,000	128		
IDAHO				
Shoshone—Light & Water Co.....	50,000	85'6"		
Downey—Oregon Short Lines.....	65,000	32'5"		
ILLINOIS				
East Dubuque.....			12	85
Carmi.....			12	116
West Dundee.....	94,000	70		
Rock Island.....			16	80
Gibson City (brick tower).....	35,000	100		
Earlville.....			12	100
Paris.....	106,000	141		
West Chicago.....			16	125
Geneva.....			16	100
Urbana—University of Illinois.....			4	60
Buda.....			10	100
Geneseo—Rock Island System.....			25	60
Greenup.....	60,000	82'6"		
Peru—Zinc Works.....			18	40
McHenry.....			16	91
Vandalia.....	60,000	82'6"		
Barrington.....			18	50
Palatine.....			12	90
Bureau—Rock Island System.....			30	30
Mokena.....	60,000	100		
McLeansboro.....	60,000	122		
Whitehall.....	80,000	114		
Thebes—Rock Island System.....	50,000	50		
Tinley Park.....	60,000	100		
Sullivan.....	80,000	120		
Chicago—P. S. Peterson's Nursery.....	30,000	81		
Lincoln—Hospital for Insane.....	30,000	75'6"		
Peoria—Rock Island System.....			20	60
Morgan Park—Mt. Hope Cemetery.....	20,000	73'6"		
Monmouth.....	115,000	127		
Hillsboro (brick tower).....	50,000	93		
North Chicago.....	100,000	105		
Marshall.....	80,000	115		
Chicago—Illinois Steel Co.....	100,000	92'6"		
Chicago.....	180,000	145		
Ottawa—Rock Island System.....			20	60
Robinson.....	75,000	110		
Hillsboro—J. R. Challacombe.....	2,000	30		
Hinsdale—E. M. Barton.....	15,000	60		

ILLINOIS—Cont.

Harrisburg.....				
Kennedale.....				
Chicago—Deering H.....				
Chicago—Nat. Malle.....				
Chicago—Simonds M.....				
Arlington Heights.....				
Piano.....				
Mt. Sterling (brick to.....				
Marseilles.....				
Peoria—Coleman Manu.....				
Hinsdale—E. M. Barton.....				
Peoria—Peo. & Pek.....				
Idlet.....				
Wyoming (brick tow.....				
Jacksonville—Hospital.....				
Lunville—C. & E. I.....				
Deiavan.....				
Naperville.....				
Zegler.....				
Crete.....				
Bartonville—Asylum.....				
Chicago—Allis-Chalm.....				
Chicago—Allis-Chalm.....				
Morgan Park.....				
Omaha (brick tower.....				
Honckley—C. B. &.....				
E. St. Louis—E. St.....				
Sycamore.....				
Paris.....				
St. Charles—Home I.....				
Ravenna—A. C. Fro.....				
River Grove—Orpha.....				
Hopedale.....				
St. Elmo.....				
Consent City.....				
Chicago—C. & W. L.....				
West Pullman—In.....				
Paw Paw.....				
Spring Valley.....				
West Franklin—C.....				
De Pue—Mineral Po.....				
Winthrop Harbor.....				
Lock Haven—C. P. P.....				
Summit—Resurrecti.....				
Newton.....				
Chicago Heights—E.....				
Green Elgin.....				
McLean—County As.....				
W. Roseland—Paul.....				
Masonville.....				
Zoodhouse.....				
Calum.....				
Salmon—C. & E. I.....				
Kewanee—K. & G.....				
Chicago—Illinois St.....				
East St. Louis—Sub.....				
Rockdale—C. B. &.....				

Chicago Bridge & Iron Works

Stand Pipes

Dia. Ft. Ht. Ft.

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Location	Water Towers		Stand Pipes	
	Cap'y Gals.	Ht. Ft.	Dia. Ft.	Ht. Ft.
ILLINOIS—Cont'd				
Harrisburg.....	80,000	80		
Riverdale.....	60,000	120		
Chicago—Deering Harvester Works	100,000	169		
Chicago—Nat. Malleable Cast. Co.	40,000	100		
Chicago—Simonds Mfg. Co.	50,000	120		
Arlington Heights.....	60,000	85		
Plano.....	80,000	104'6"		
Mt. Sterling (brick tower).....	40,000	100		
Marseilles.....			16	65
Peoria—Colean Manufacturing Co.	50,000	104		
Hinsdale—E. M. Barton.....	40,000	100		
Peoria—Peo. & Pek. Un. Ry. Co.	100,000	89		
Joliet.....	200,000	92'6"		
Wyoming (brick tower).....	35,000	100		
Jacksonville—Hospital for Insane.....	25,000	104		
Danville—C. & E. I. Ry. Co.	100,000	89		
Delavan.....	70,000	93		
Naperville.....	100,000	140		
Zeigler.....	50,000	104		
Crete.....	50,000	120		
Bartonville—Asylum for Insane.....	100,000	114		
Chicago—Allis-Chalmers Co.			20	135
Chicago—Allis-Chalmers Co.	50,000	135		
Morgan Park.....	100,000	140		
Onarga (brick tower).....	50,000	92		
Hinckley—C., B. & Q. Ry. Co.	35,000	47		
E. St. Louis—E. St. L. & Sub. Ry.	50,000	59		
Sycamore.....	200,000	157		
Paris.....			24	12
St. Charles—Home for Boys.....	50,000	52		
Ravinia—A. C. Frost.....	40,000	126'6"		
River Grove—Orphan Society.....	20,000	107'6"		
Hopedale.....	50,000	99'		
St. Elmo.....	60,000	120		
Crescent City.....	50,000	100		
Chicago—C. & W. I. Ry.	100,000	52'		
West Pullman—Int'l Harvester Co.	100,000	139		
Paw Paw.....	60,000	102'6"		
Spring Valley.....	150,000	115'		
West Frankfort—C. & E. I. Ry. Co.	50,000	89		
De Pue—Mineral Point Zinc Co.	100,000	139		
Winthrop Harbor.....	60,000	100		
Lock Haven—C. P. & St. L. Ry. Co.	60,000	35		
Summit—Resurrection Cemetery.....	5,000	46		
Newton.....	80,000	120		
Chicago Heights—E. J. & E. Ry.	100,000	42'6"		
Glenn Ellyn.....	60,000	106'6"		
McLean—County Asylum.....	30,000	100'6"		
W. Roseland—Paul Vandenburg.....	5,000	55'		
Mascoutah.....	50,000	120		
Roodhouse.....	60,000	120		
Cullom.....	50,000	129		
Salem—C. & E. I. Ry. Co.	100,000	129		
Kewanee—K. & G. Ry. Co.	50,000	129		
Chicago—Illinois Steel Co.	80,000	70		
East St. Louis—Suburban Ry. Co.	35,000	96		
Rochelle—C. B. & Q. Ry. Co.	50,000	39'6"		

Metal Structures



Location	Water Towers		Stand Pipes	
	Cap'y Gals.	Ht. Ft.	Dia. Ft.	Ht. Ft.
ILLINOIS—Cont'd				
Milledgeville—C. B. & Q. Ry. Co...	50,000	39'6"		
Chicago—Swift & Co.....	66,000	118		
Park Ridge.....	100,000	100		
St. Charles.....	100,000	119		
Minooka.....	60,000	120		
Hawthorne—Western Electric Co..	50,000	79		
Chicago—Grand Crossing Tack Co..	60,000	131'6"		
Casey.....	80,000	174'6"		
Bourbonnais.....	50,000	125		
Morrison—Libby, MacNeil & Libby	30,000	95'6"		
INDIANA				
Monticello.....			14	110
Booneville.....	110,000	113'5"		
Huntington.....			30	75
Rensselaer.....	100,000	140		
Brownstown.....			14	80
Napanee.....	75,000	100		
Syracuse.....			12	50
Tell City.....	100,000	109'6"		
Noblesville—National Carbon Co...	10,000	94		
Waterloo.....			12	120
South Bend—Singer Mfg. Co.....	20,000	48		
Indianapolis—Nat. Mal'ble Cast. Co.	50,000	94		
Oakland City.....	60,000	100		
Aurora.....			40	30
Gas City—U. S. Glass Co.....	30,000	100'6"		
Richmond—Hospital for Insane...			16	110
Evansville—Hospital for Insane...	100,000	139		
Howell—L. & N. Ry. Co.....	200,000	109		
St. Mary's Vigo Co—College.....	100,000	110		
Laketon—Erie R. R. Co.....	50,000	39'6"		
Fort Wayne—Wayne Knit. Mills...	40,000	101'6"		
Fort Wayne—Traction Co.....	25,000	69'		
Indianapolis—E. C. Atkins Co.....	50,000	104		
INDIAN TERRITORY				
Chickasha—Rock Island System...			20	60
Haileyville—Rock Island System...	100,000	120		
Paul's Valley.....	80,000	160		
Purcell.....	100,000	120		
Ardmore.....			25	120
Holdenville.....	70,000	80		
Okmulgee.....	70,000	120		
Wilburton.....			20	67'6"
Tishomingo.....	80,000	80		
Ada.....	80,000	80		
Tulsa.....			14	100
Bartlesville.....			10	125
Wagoner—M. K. & T. Ry. Co.....	30,000	60		
Davis.....	50,000	110		
Marlow.....	50,000	100		
Roff.....	50,000	110		
IOWA				
Lake City.....			12	80
Clear Lake.....			12	80

Chicago B

IOWA—Cont'd

Location	Cap'y Gals.	Ht. Ft.	Dia. Ft.	Ht. Ft.
Fort Dodge.....				
Eagle Grove.....				
Forest City.....				
Ponda.....				
Newton.....				
Wasson.....				
Osceola.....				
Walmart.....				
Charles City.....				
Keosauqua.....				
Wilton—Rock Island.....				
Washington—Rock Island.....				
Iowa City—Rock Island.....				
Atlantic—Rock Island.....				
Orange.....				
Kenwood Park.....				
Muscatine—County A.....				
Elkhart—Rock Island.....				
Garner.....				
Bonaparte.....				
Wilton.....				
Charida.....				
West Liberty.....				
Pacific Junction—C.....				
Manning.....				
Rockford.....				
Malvern.....				
Iowa City.....				
Battle Creek.....				
Owensia.....				
Durant.....				
Humboldt.....				
Sumner.....				
Coon Rapids—C. M.....				
Reel Oak—Thos. D. M.....				
Valley Junction—C. R.....				
Madrid.....				
Seneca—C. M. & St. F.....				
KANSAS				
Herrington—Rock Island.....				
Horton—Rock Island.....				
McFarland—Rock Island.....				
Belleville—Rock Island.....				
Goodland—Rock Island.....				
Pratt.....				
Scammon.....				
LeHarpe.....				
Cherryville.....				
Waverly.....				
Humboldt.....				
Chanute—Kansas N.....				
Phillipsburg.....				
Kennett—M. K. & T.....				
Lincoln Center.....				
Bradford.....				
Osola.....				

ures Chicago Bridge & Iron Works

Location	Water Towers		Stand Pipes	
	Cap'y Gals.	Ht. Ft.	Dia. Ft.	Ht. Ft.
IOWA—Cont'd				
Fort Dodge.....	104,000	116'6"	15	100
Eagle Grove.....			14	100
Forest City.....	70,000	100	30	16
Fonda.....			14	100
Newton.....			14	80
Waukon.....			10	100
Oelwein.....			20	80
Walnut.....	56,000	75	20	60
Charles City.....			20	60
Keosauqua.....			12	40
Wilton—Rock Island System.....			16	40
Washington—Rock Island System.....	80,000	134		
Iowa City—Rock Island System.....	40,000	76'		
Atlantic—Rock Island System.....	20,000	40		
Osage.....			20	60
Kenwood Park.....				
Muscatine—County Asylum.....	60,000	120		
Eldon—Rock Island System.....			10	60
Garner.....	50,000	82		
Bonaparte.....			20	60
Wilton.....	60,000	102		
Clarinda.....	50,000	41		
West Liberty.....	60,000	128'9"		
Pacific Junction—C. B. & Q. Ry....	80,000	120		
Manning.....	65,000	113'6"		
Rockford.....	80,000	74'6"		
Malvern.....	60,000	91'6"		
Iowa City.....	60,000	102		
Battle Creek.....	65,000	104		
Osceola.....			20	50
Durant.....	50,000	125		
Humboldt.....	80,000	43		
Sumner.....	40,000	51'6"		
Coon Rapids—C. M. & St. P. Ry....			22	49
Red Oak—Thos. D. Murphy & Co....	50,000	120		
Valley Junct.—C. R. I. & P. Ry. Co..	80,000	38'6"		
Madrid.....				
Sewel—C. M. & St. P. Ry. Co.....				
KANSAS				
Herrington—Rock Island System.....			20	60
Horton—Rock Island System.....			20	60
McFarland—Rock Island System.....			20	60
Belleville—Rock Island System.....			20	60
Goodland—Rock Island System.....			20	60
Pratt.....	50,000	80		
Scammon.....	70,000	101		
LaHarpe.....	70,000	100		
Cherryvale.....			16	80
Waverly.....	30,000	100		
Humbolt.....	70,000	120		
Chanute—Kansas Natural Gas Co....	10,000	69		
Phillipsburg.....			22	49
Rosedale—M. K. & T. Ry. Co.....	40,000	101'6"		
Lincoln Center.....	70,000	120		
Stafford.....	50,000	100		
Udall.....	30,000	75'6"		

Metal Structures



Location	Water Towers		Stand Pipes	
	Cap'y Gals.	Ht. Ft.	Dia. Ft.	Ht. Ft.
KENTUCKY				
Clinton.....	40,000	60		
Highlands.....	80,000	135'6"		
Wycliffe.....	40,000	75		
Henderson—Coquillard Wag. Wks..	50,000	79		
Glenview.....	30,000	75'6"		
Henderson Cotton Mills.....	50,000	99		
Lawrenceburg.....	60,000	84		
Danville—Cin., N. O. & Tex. Pac..	100,000	81		
Lexington—Cin., N. O. & Tex. Pac..	100,000	50		
Henderson—Delker Carriage Co....	25,000	74		
Lexington—Lex. & East. Ry. Co....	50,000	70'6"		
Louisville—Louisville Water Co....	1200000	220'		
Lexington—L. & E. Ry. Co....	50,000	39'6"		
Hopkinsville—Imperial Tob. Co....	20,000	107'6"		
Lexington—J. J. Fitzgerald.....			10	55
LOUISIANA				
Natchitoches.....	60,000	115		
Ruston.....	80,000	84		
Jennings.....	65,000	112		
LeCompte.....	30,000	100		
Clarks—Louisiana Cent. Lumber Co.	45,000	85		
Rayne.....	50,000	104		
Washington.....	50,000	100		
Shreveport—N. O. & N. E. Ry. Co.	50,000	69'6"		
Minden.....	100,000	119		
Lake Providence.....	60,000	112		
Boyce.....	50,000	100		
Vidalia.....	50,000	100		
Marksville.....	70,000	110		
Natalbany—Natalbany Lum. Co....	60,000	136'6"		
Trout—Good Pine Lumber Co....	25,000	97'		
Selma—Grant Land & Lumber Co....	25,000	97'		
Minden—Minden Lumber Co....			16	16
MAINE				
South Berwick—Cummings Shoe Co.	40,000	101'6"		
Fort McKinley, U. S. A.....	150,000	120'6"		
Katahdin Pulp & Paper Co.....	40,000	76'6"		
Spragues Falls—St. Croix Pap. Co..	75,000	145		
MARYLAND				
Tacoma Park.....	50,000	164		
Hyattsville.....	100,000	103		
Forest Glen—Nat. Park Seminary..	40,000	99'3"		
Hagerstown—Pope Mfg. Co.....	50,000	129		
College Park P. O.—Md. Agri. Col.	30,000	95'6"		
Baltimore—West Md. & Tide W. Ry.	25,000	53		
Baltimore Fidelity Warehouse Co....	40,000	82		
Baltimore—Md. Color Ptg. Co....	30,000	34		
Hagerstown—Hag. Furniture Co....	40,000	126'6"		
MASSACHUSETTS				
Webster—Slater Woolen Mills.....	100,000	89		
North Adams—Arnold Print Wks....	50,000	89		
Millville—Woonsocket Rubber Co..	50,000	129		

MASSACHUSETTS

E. Pepperel—Nashua
Wheelwright—Wheel
Walpole.....
West Newton—Mart
Boston—Boston & M
Boston—Boston & M

MICHIGAN

Richmond.....
Muskegon.....
Paw Paw.....
Hartford.....
Leslie.....
Algonac.....
New Baltimore.....
Armada.....
Bangor.....
Coopersville.....
Corunna.....
Grand Rapids—Pere
Detroit—American B
Clare.....
Manistowic.....
Grosse Point.....
Charlevoix.....
Spring Lake.....

MINNESOTA

New Ulm.....
Northfield.....
Wayzata.....
Le Sueur.....
Morris.....
Redwood Falls.....
Hendricks.....
Warren.....
Mora.....
Montgomery.....
Fond du Lac—Gt. N
Stillwater—Water C

MISSISSIPPI

Oxford.....
Port Gibson.....
Brookhaven.....
Senatobia.....
McComb City.....
Columbus.....
Starkville.....
Carthage.....
Corinth.....
Brookhaven—Pear
Meridian—N. O. &
Rosedale Cotton Co
Greenwood.....
Gloster.....
Sardis.....

Chicago Bridge & Iron Works

Location	Water Towers		Stand Pipes	
	Cap'y Gals.	Ht. Ft.	Dia. Ft.	Ht. Ft.
MASSACHUSETTS—Cont'd				
E. Pepperel—Nashua R. Paper Co.	50,000	89		
Wheelwright—Wheelwright Pap. Co.	50,000	104		
Walpole.			40	45
West Newton—Martin Mfg. Co.	25,000	84		
Boston—Boston & Maine Ry.	100,000	239		
Boston—Boston & Maine Ry.	100,000	179		
MICHIGAN				
Richmond.			12	100
Munissing.			25	40
Paw Paw.	60,000	115		
Hartford.	40,000	100		
Leslie.			12	80
Algonac.	50,000	80		
New Baltimore.	40,000	100		
Armada.	40,000	100		
Bangor.	50,000	120		
Coopersville.	30,000	110'6"		
Corunna.	60,000	91'6"		
Grand Rapids—Pere Mar. Ry. Co.	100,000	89		
Detroit—American Blower Co.	60,000	156'6"		
Clare.	75,000	115		
Manistique.	50,000	100		
Grosse Point.	100,000	88		
Charlevoix.	100,000	145		
Spring Lake.	30,000	125'6"		
MINNESOTA				
New Ulm.			11	36
Northfield.			35	35
Wayzata.	13,000	28		
Le Sueur.			18	75
Morris.	75,000	100		
Redwood Falls.	100,000	120		
Hendricks.	60,000	108		
Warren.	50,000	110		
Mora.	50,000	110		
Montgomery.	52,000	101		
Fond du Lac—Gt. North. Pow. Co.	308,000	229		
Stillwater—Water Co.			20	45
MISSISSIPPI				
Oxford.	65,000	124		
Port Gibson.	80,000	125		
Brookhaven.	90,000	130		
Senatobia.	40,000	87		
McComb City.	100,000	114		
Como.	40,000	100		
Starkville.	50,000	100		
Clarksdale.	60,000	100		
Corinth.	50,000	100		
Brookhaven—Pearl Riv. Lum. Co.	45,000	100		
Meridian—N. O. & N. E. Ry. (2.)	75,000	89		
Rosedale Cotton Compress Co.	15,000	95		
Greenwood.	100,000	120		
Gloster.	35,000	118		
Sardis.	60,000	100		

Metal Structures



Location	Water Towers		Stand Pipes	
	Cap'y Gals.	Ht. Ft.	Dia. Ft.	Ht. Ft.
MISSISSIPPI—Cont'd				
Hazlehurst.....	75,000	110		
Rosedale.....	30,000	100		
Magnolia.....	15,000	50		
Hollandale.....	40,000	100		
Picayune—N. O. & Northeast Ry.	75,000	75		
Centerville.....	35,000	108		
Grenada—Ayer & Lord Tie Co.	100,000	88		
Belzona.....	75,000	140		
Mendenhall—Gulf & Ship Isl. Ry.	50,000	35		
Belzona (reservoir tank).....			35	14
Carrollton.....			10	60
Magnolia.....	100,000	100		
Aberdeen.....	100,000	130		
Ellisville.....	60,000	102		
Lumberton.....	60,000	100		
Houston.....	70,000	113		
Raymond.....	30,000	98		
Clarksdale—People's Com. Co.	15,000	93		
New Albany—N. A. Compress Co.	30,000	85'6"		
Jackson—Jackson Graphite Co.	10,000	49		
Macon.....	100,000	128		
Utica.....	50,000	100		
Shelby.....	50,000	100		
MISSOURI				
St. Charles.....				
Sedalia—Mo., Kan. & Tex. Ry. Co.	80,000	90	25	70
West Plains.....			14	50
Paris.....	60,000	110		
Eldorado Springs.....	70,000	86		
Springfield.....			35	105
Rich Hill.....	75,000	120		
Armour—C., B. & Q. Ry. Co.	90,000	56		
Bonne Terre—St. Joseph Lead Co.	36,000	48'6"		
Jefferson Barracks, U. S. A.	150,000	127		
Sulphur Springs—Mo. Pac. Ry. Co.			28	24
Perryville—St. Mary's Seminary	50,000	149		
Cameron.....	70,000	93		
New Madrid.....	50,000	115		
Fulton—Asylum for Deaf & Dumb	40,000	91'6"		
Liberty.....	60,000	97		
Boonville.....	70,000	120		
Kansas City—Griffin Wheel Co.	30,000	110'6"		
Charleston—Water Co.	30,000	100'6"		
Fiat River—Federal Lead Co.	108,000	93		
Fiat River—Federal Lead Co.			50	33
Coburg—C. M. & St. P. Ry. Co.	100,000	39'2"		
Kearney—C. B. & Q. Ry. Co.	100,000	43'2"		
Walden—C. B. & Q. Ry. Co.	100,000	43'2"		
Napier—C. B. & Q. Ry. Co.	100,000	43'2"		
MONTANA				
Shinook.....	100,000	120		
Great Falls.....			40	60
NEBRASKA				
Wakefield.....			12	80

NEBRASKA—Con

Humphrey.....
Randolph.....
Fairbury—Rock Island
Wakefield—Rock Island
Bloomfield.....
Albion.....
Laurel—Rock Island S
Pierce.....
Greeley.....
Arlington.....

NEW HAMPSHIRE

Portsmouth—U. S. Na
Berlin—International

NEW JERSEY

Dover—DeLa. L. & W
Delawanna—Worthen
Vineland.....
Camden—N. Y. Ship
Cape May.....
South Atlantic City—
Loth—Boettger Piece
Harrison—Intern'l Ste
Paterson—Nicholson S
Passaic—Botany Wors
Bayonne—Babcock &
Newark—F. D. Hyde
Bayonne—Safety In.
Camden—Farr & Baile
Hoboken—D. L. & W
Kingland—D. L. & W
Newark—Hay Foundr
Camden—Water Co.
Passaic—Gera Mills
Passaic—Manhattan R
Newark—Nk. Wareho
Kingland—D. L. & W

NEW YORK

Charlotte.....
Port Washington.....
Center Islip.....
Buffalo—Lackawanna
Ingois—Thomas Asy
Schenectady—General
Briarcliffe Manor.....
Brooklyn Heights—St
Schenectady.....
Buffalo—Internat'l Ste
Chappaqua—V. Guin
tower.....
Tonawanda—Ticonde
Paper Co.....
International Paper C
Governor's Island, U.
Rochester—State Hos

Chicago Bridge & Iron Works

Stand Pipes		Location	Water Towers		Stand Pipes	
Dia. Ft.	Ht. Ft.		Cap'y Gals.	Ht. Ft.	Dia. Ft.	Ht. Ft.
NEBRASKA—Cont'd						
		Humphrey.....	40,000	100	12	60
		Randolph.....			20	60
		Fairbury—Rock Island System.....			12	40
		Wakefield—Rock Island System.....			12	60
		Bloomfield.....				
		Albion.....	80,000	84'6"	12	60
		Laurel—Rock Island System.....				
		Pierce.....	50,000	100		
35	14	Greeley.....	40,000	98		
10	60	Arlington.....	40,000	78		
NEW HAMPSHIRE						
		Portsmouth—U. S. Navy Yard.....			30	100
		Berlin—International Paper Co.....	50,000	132		
NEW JERSEY						
		Dover—Dela., L. & Western Ry.....			20	48
		Delawanna—Worthen & Aldrich.....	100,000	139		
		Vineland.....	185,000	120		
		Camden—N. Y. Shipbldg. Co.....	150,000	242		
		Cape May.....	150,000	135		
		South Atlantic City—Pa. R. R. Co.....	25,000	69'6"		
		Lodi—Boettger Piece Dye Works.....	75,000	98		
		Harrison—Intern'l Steam Pump Co.....	100,000	150		
		Paterson—Nicholson File Co.....	60,000	100		
		Passaic—Botany Worsted Co.....	100,000	139		
		Bayonne—Babcock & Wilcox Co.....	100,000	140		
		Newark—F. D. Hyde.....	25,000	80		
		Bayonne—Safety In. Cable Co.....	50,000	104		
		Camden—Farr & Bailey Mfg. Co.....	100,000	149		
		Hoboken—D. L. & W. Ry. Co.....	100,000	139		
		Kingsland—D. L. & W. Ry. Co.....	100,000	139		
		Newark—Hay Foundry & Mach. Co.....	30,000	85'6"		
		Camden—Water Co.....	30,000	90		
		Passaic—Gera Mills.....	50,000	129		
		Passaic—Manhattan Rubber Co.....	50,000	104		
		Newark—Nk. Warehouse Co. (2).....	30,000	45'6"		
		Kingsland—D. L. & W. Ry. Co.....	60,000	44		
NEW YORK						
		Charlotte.....			14	75
		Port Washington.....			20	80
		Center Islip.....			20	85
		Buffalo—Lackawanna Steel Co.....	112,000	162		
		Iroquois—Thomas Asylum.....	25,000	100		
		Schenectady—General Electric Co.....			60	50
50	33	Briarcliffe Manor.....	100,000	140		
		Brooklyn Heights—Street Ry. Co.....	100,000	109		
		Schenectady.....			90	55
		Buffalo—Internat'l Steam Pump Co.....	50,000	129		
		Chappaqua—V. Guinzburg (stone tower).....	50,000	51		
		Ticonderoga—Ticonderoga Pulp & Paper Co.....	100,000	139		
40	60	International Paper Co.....	50,000	104		
		Governor's Island, U. S. A.....			27	44
	80	Rochester—State Hospital.....			20	85

Metal Structures



Location	Water Towers		Stand Pipes	
	Cap'y Gals.	Ht. Ft.	Dia. Ft.	Ht. Ft.
NEW YORK—Cont'd				
Poughkeepsie—De Laval Sep. Wks.	80,000	95'6"		
Rochester—Stromberg-Carl's'n Tele- phone Co.	100,000	139		
Scotia	100,000	159		
Sherrill—Oneida Community Co.	30,000	75'6"		
Watertown—N. Y. Air Brake Co.	75,000	135		
Utica—Foster Bros.	40,000	101'6"		
Irrington—Isaac Stern.	100,000	48'2"		
Elmsford			15	75
Saratoga Springs—Clark Text. Co.	40,000	115		
Hawthorne			15	75
Buffalo—Geo. N. Peirce	60,000	106'6"		
Scarborough—James Speyer	30,000	54		
NORTH CAROLINA				
Charlotte	50,000	80		
Reidsville	75,000	125		
Wadesboro	75,000	125		
High Point	150,000	165		
Clifton—Clifton Mfg. Co.	50,000	61		
Clifton—Clifton Mfg. Co.	60,000	51'6"		
Glendale—Clifton Mfg. Co.	60,000	61'6"		
Washington	100,000	128		
Greensboro	200,000	174		
Old Fort—U. S. Leather Co.			20	60
Wilson—Imperial Tobacco Co.	25,000	100		
Rocky Mount—Imperial Tob. Co.	20,000	97'6"		
Greenville—Imperial Tobacco Co.	20,000	102'6"		
Morganton			14	84
Oxford	100,000	139		
Graham	75,000	159		
West Raleigh—Agricultural Col.	30,000	90'6"		
Spencer	75,000	159		
Gastonia—Loray Mills	30,000	75'6"		
Burlington—Glencoe Mills	30,000	85'6"		
Asheville—Southern Ry.	100,000	63'2"		
Gastonia—Clara Mfg. Co.	50,000	79'		
Lumberton—Dresden Cotton Mills	40,000	76'6"		
NORTH DAKOTA				
Jamestown			20	55
OHIO				
Bluffton	85,000	112'8"		
Lynchburg	40,000	98		
Delphos			20	130
Rockford			11	100
Blanchester	50,000	110		
Galion	155,000	162'6"		
Shelby			16	130
Hiram			12	60
Continental			10	100
Chicago	80,000	103		
Sycamore	40,000	100		
College Hill	100,000	154		
Fort Recovery	50,000	110		
Leipsic	50,000	115		



OHIO—Cont'd

Location			
Van Wert			
Waynesville			
Cuyahoga Falls			
Hamilton—Champion			
Cleveland—National C			
Hazleton—Pitts. & L			
Plymouth			
Columbus Grove			
Mt. Gilead			
Gambier—Kenyon Col			
New Vienna			
Bainbridge			
West Milton			
New Bremen			
Johnstown			
Vermilion			
Columbus State Hospi			
Covington			
Upper Sandusky—Wa			
Lancaster—Ohio Flint			
Freemont—National Ca			
State Soldiers' Home			
Fredericktown			
Rocky River—Water			

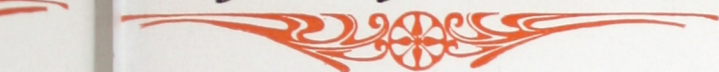
OKLAHOMA

Stuart			
Ponca City			
Stillwater			
Kingfisher			
Newark			
Hennessey			
Tulsa			
Post Creek			
Blackwell			
Whiteagle—Ponco In			
Mellard			
Alva			
Geymon			
Watonga			
Cordell			
Manum			
Chanler			
Bridgeport			
Fort Sill, U. S. A.			
Parview—K. C. M. &			
Tenasha			

PENNSYLVANIA

Nicholson—D. L. &			
Stroudsburg—D. L. &			
Lebanon—Lackawann			
Philadelphia—Robt.			
Lebanon Co.			
Lancaster			
Berry Church—Hersh			
Co.			

Chicago Bridge & Iron Works



Stand Pipes		Location		Water Towers		Stand Pipes	
Dia. Ft.	Ht. Ft.			Cap'y Gals.	Ht. Ft.	Dia. Ft.	Ht. Ft.
OHIO—Cont'd							
		Van Wert.....		120,000	150		
		Waynesville.....				12	80
		Cuyahoga Falls.....		100,000	84		
		Hamilton—Champion Paper Co.....		125,000	100		
		Cleveland—National Carbon Co.....		40,000	100		
		Hazleton—Pitts. & L. E. R. R. (2).....		60,000	51'6"		
		Plymouth.....		50,000	129		
15	75	Columbus Grove.....		60,000	115		
		Mt. Gilead.....		50,000	129		
15	75	Gambier—Kenyon College.....		40,000	77'6"		
		New Vienna.....		50,000	115		
		Bainbridge.....		30,000	109'6"		
		West Milton.....		40,000	140		
		New Bremen.....		40,000	110		
		Johnstown.....		40,000	110		
		Vermillion.....		100,000	100		
		Columbus State Hospital.....		100,000	150		
		Covington.....		50,000	150		
		Upper Sandusky—Water Co.....		100,000	100		
		Lancaster—Ohio Flint Glass Wks.....		75,000	135		
		Fremont—National Carbon Co.....		30,000	100'6"		
		State Soldiers' Home, Erie County.....		60,000	150		
		Fredericktown.....		40,000	110		
20	60	Rocky River—Water Co.....				15	100
OKLAHOMA							
		Shawnee.....		100,000	140		
		Ponca City.....		100,000	120		
14	84	Stillwater.....		100,000	120		
		Kingfisher.....		100,000	140		
		Newkirk.....		100,000	140		
		Hennessey.....		30,000	100		
		Tonkawa.....		60,000	120		
		Pond Creek.....		60,000	120		
		Blackwell.....		80,000	160		
		Whiteagle—Ponco Indian School.....		20,000	91		
		Medford.....		60,000	120		
		Alva.....		60,000	106'6"		
		Guymon.....		40,000	66'6"		
		Watonga.....		40,000	120		
20	55	Cordell.....		40,000	120		
		Mangum.....		80,000	120		
		Chandler.....				12	100'
		Bridgeport.....		40,000	120		
20	130	Fort Sill, U. S. A.....		100,000	105		
11	100	Fairview—K. C. M. & O. Ry. Co.....		50,000	109		
		Tecumseh.....		50,000	100		
PENNSYLVANIA							
16	130	Nicholson—D. L. & W. R. R. Co.....				22	37'6"
12	60	Stroudsburg—D. L. & W. R. R.....				20	60
10	100	Lebanon—Lackawanna Steel Co.....		30,000	115		
		Philadelphia—Robt. H. Foerderer.....					
		Leather Co.....		100,000	139		
		Lancaster.....				25	110
		Derry Church—Hershey Chocolate Co.....		50,000	90		

Metal Structures

Location	Water Towers		Stand Pipes	
	Cap'y Gals.	Ht. Ft.	Dia. Ft.	Ht. Ft.
PENNSYLVANIA—Cont'd				
Shamokin—Shamokin Lumber Co.	30,000	120'6"		
Jeannette—Jeannette Glass Wks.	75,000	135		
Pittsburg—Pittsburg Rys. Co.	75,000	135		
RHODE ISLAND				
Natick—B. B. & R. Knight Mills.	100,000	60		
Pontiac—B. B. & R. Knight Mills.	60,000	146		
Apponaug—Wm. Wanton Dunnell.	100,000	139		
Providence—Pocassett Worsted Co.	50,000	119		
Georgiaville—Bernon Mills.	40,000	60		
Thornton—H. Hartley.	50,000	119		
Warren—Warren Mfg. Co.	75,000	135		
Warren—Parker Mills.	75,000	135		
SOUTH CAROLINA				
Greenville—Monaghan Mills.	60,000	131'6"		
Griers—Victor Manufacturing Co.	60,000	112		
Union—Monarch Mills.	40,000	132		
Darlington—Darlington Mills.	50,000	114		
Spartanburg—Saxon Mills.	40,000	122'6"		
Woodruff—Woodruff Mills.	50,000	121		
Florence.	100,000	132		
Belton—Belton Mills.	100,000	120		
Honea Path—Chiquola Mfg. Co.	50,000	125		
Ninety-Six Cotton Mill.	40,000	106'6"		
Greenwood—Grendel Mills.	40,000	101'6"		
Greenville—Woodside Mills.	50,000	125		
Spartanburg—Drayton Mills.	40,000	106'6"		
Clifton—Clifton Mfg. Co.	100,000	139		
Belton—John B. Adler.	2,000	42'		
Sampit—Georgetown Water Co.	75,000	130		
Georgetown—Georgetown Wat. Co.	100,000	130		
Belmont—Imperial Yarn Mills.	50,000	89		
Iva—Jackson Mills.	50,000	129		
SOUTH DAKOTA				
Madison.			14	100
Brookings.	135,000	124		
Webster.	85,000	122		
Millbank.	80,000	120		
Sioux Falls.	230,000	129'12"		
TENNESSEE				
Mt. Pleasant.	40,000	100		
Memphis—Memphis Trotting Asso.	50,000	69		
Dyersburg.			27	50
Springfield.	75,000	120		
Bolivar.	50,000	120		
Franklin.	103,000	114		
TEXAS				
Pilot Point.	10,000	62		
Hillsboro.			14	116
Franklin.			10	75
Plano.			12	80
Corsicana.			20	100
Wichita Falls.	100,000	90		

Chicago B

Location

TEXAS—Cont'd

Honey Grove.				
Houston—Weld & Nevil				
Texarkana—International				
ing Co.				
Amarillo.				
Marlin.				
Fort Sam Houston, U. S.				
Fort Clark, U. S. A.				
Marshall.				
Corsicana—Corsicana Co.				
Austin—University of T				
Austin—Deaf & Dumb				
Austin—University of T				
Alvarado.				
Sherman.				
Fort Brown, U. S. A.				
Clarksville.				
Jefferson.				
Kingsville—Kingsville L				
N. Fort Worth.				
Pittsburgh.				
Hondo.				
San Antonio.				
Midlothian—Water Co.				
Jacksonville.				
Hodge—M. K. & T. Ry.				
Llano—Llano Milling Co.				
Kennedy—Kennedy Cot				

UTAH

Murray—Am. Smelt. & E				
VERMONT				
Rutland—Chittenden P				
East Ryegate—Ryegate				

VIRGINIA

Blacksburg—Agricultur				
Danville—American To				
Richmond—American C				
Chatham.				
Lynchburg—American				

WASHINGTON

Olympia.				
Pullman—Agricultural				

WISCONSIN

Augusta.				
Wentby.				
Onamawoc.				
Verona—County Asylu				
N. Fond du Lac—W. C				
Lancaster—County Asy				
Jefferson.				
Traverseville.				
Stanley.				
Roshburg (brick tower				

Chicago Bridge & Iron Works

Stand Pipes Dia. Ft. Ht. Ft.	Location	Water Towers		Stand Pipes	
		Cap'y Gals.	Ht. Ft.	Dia. Ft.	Ht. Ft.
	TEXAS—Cont'd				
	Honey Grove.....	150,000	120		
	Houston—Weld & Neville Co.....	60,000	110		
	Texarkana—International Creosot- ing Co.....	70,000	113		
	Amarillo.....	60,000	80		
	Marlin.....	80,000	120		
	Fort Sam Houston, U. S. A.....	70,000	94		
	Fort Clark, U. S. A.....	60,000	92'6"		
	Marshall.....	160,000	125		
	Corsicana—Corsicana Cotton Fact.	40,000	81'6"		
	Austin—University of Texas.....	200,000	120		
	Austin—Deaf & Dumb Institute.....			18	100
	Austin—University of Texas.....			6	15
	Alvarado.....			12	100
	Sherman.....			20	120
	Fort Brown, U. S. A.....	50,000	79		
	Clarksville.....	80,000	80		
	Jefferson.....	40,000	60'		
	Kingsville—Kingsville Land Co.....	50,000	104'		
	N. Fort Worth.....	100,000	100		
	Pittsburgh.....	50,000	100		
	Hondo.....	50,000	79		
	San Antonio.....	15,000	100		
	Midlothian—Water Co.....	60,000	96'6"		
	Jacksonville.....	50,000	110		
	Hodge—M. K. & T. Ry. Co.....	30,000	60'		
	Llano—Llano Milling Co.....			15	100
	Kennedy—Kennedy Cotton Oil Co.	30,000	95'6"		
	UTAH				
	Murray—Am. Smelt. & Refin. Co. (2)			20	40
	VERMONT				
	Rutland—Chittenden Power Co....	70,000	220'		
	East Ryegate—Ryegate Paper Co..	50,000	64		
	VIRGINIA				
	Blacksburg—Agricultural College...	50,000	120		
	Danville—American Tobacco Co...	50,000	129		
	Richmond—American Cigar Co....	60,000	131'6"		
	Chatham.....			20	40
	Lynchburg—American Snuff Co....	40,000	93'6"		
	WASHINGTON				
	Davenport.....	60,000	85		
	Pullman—Agricultural College....	70,000	65		
	WISCONSIN				
	Augusta.....	60,000	140		
	Westby.....			16	50
	Oconomowoc.....	80,000	115		
	Viroqua—County Asylum.....	40,000	100		
	N. Fond du Lac—W. C. R. R. Co..			25	60
	Lancaster—County Asylum.....	40,000	100		
	Jefferson.....			12	100
	Evansville.....			12	75
	Stanley.....	80,000	100		
	Reedsburg (brick tower).....	60,000	100		

Metal Structures

Location	Water Towers		Stand Pipes	
	Cap'y Gals.	Ht. Ft.	Dia. Ft.	Ht. Ft.
WISCONSIN—Cont'd				
Merrillan.....	50,000	110		
Janesville—County Asylum.....	50,000	100		
Cuba City.....	65,000	124		
LaCrosse—County Asylum.....	80,000	114'6"		
Fond du Lac—Fred Rueping Leather Co.....	50,000	109		
Waupaca—Wis. Veteran's Home.....	80,000	92'4"		
Abbottsford—Wis. C. R. R. Co.....			20	60
Milwaukee—National Electric Co.....	50,000	129		
Milwaukee—Allis-Chalmers Co.....	100,000	164		
Oshkosh—Winnebago Co. Asylum.....	80,000	114'6"		
Barksdale—Atlantic Mfg. Co.....	75,000	110		
Chetek.....	50,000	110		
Kiel.....	60,000	107'6"		
Hazel Green.....	30,000	78'		
East Winona—C. B. & Q. Ry. Co.....	100,000	43'2"		
De Pere (2).....	50,000	145		
Owen—Wis. Cent. Ry. Co.....			20	80
Fond du Lac—County Asylum.....	20,000	91		
Kenosha.....	250,000	138		
New London—Wisconsin Chair Co.....	40,000	96'6"		
Boyd.....	40,000	84'		
CANADA				
Pictou, Nova Scotia.....			40	60
Toronto, Ont.—Can. Gen. Elec. Co.....	100,000	139		
Edmonton, Northwest Territory.....	75,000	91		
Montreal, Quebec—Can. Pac. Ry.....	75,000	85		
Niagara Falls, Ontario—Canadian Niagara Power Co.....			30	116
Lethbridge, Northwest Territory.....			20	80
Winnipeg, Manitoba—Can. Pac. Ry.....	125,000	135		
St. Boniface, Manitoba.....	106,000	141		
Galt, Ont.—Goldie & McCulloch Co.....	30,000	114'		
Montreal, Que.—Canada Car Co.....	75,000	105		
Montreal, Que.—Sim. Ry. Appl. Co.....	50,000	104		
Strathcona, N. W. T.....	120,000	120		
Sturgeon Falls, Ont.—Northern Sulphite Mills.....	125,000	136'6"		
Aurora, Ont.....	60,000	60		
MacLeod, Alb.....	120,000	120		
Medicine Hat, Alb.....			35	70
CUBA				
Nipe Bay—Nipe Bay Company.....	12,500	109'6"		
MEXICO				
Mexico—Mex. Car. & Foundry. Co.....	66,000	84		
Velardina—Mining Co.....	50,000	81		
Torreón.....	25,000	124		
PANAMA, CANAL ZONE				
Culebra, U. S. A.....	50,000	65'		
Colon, U. S. A.....	400,000	112'6"		
Mt. Hope, U. S. A.....			40	53'6"
PHILIPPINE ISLANDS				
Parang—U. S. Naval Station.....	100,000	80'		

Chicago Br

Total Number

FOR Municipalities.....
Factories and Mills.....
Railways.....
Asylums and Public
Government Proper
Schools and Colleges
Private Estates.....
Pleasure Resorts.....
Power Companies.....
Cemeteries.....
Nurseries.....

See detail list for location

List of Railway

Delaware, Lackawanna
Pennsylvania
Boston & Maine
Pittsburg & Lake Erie
Cincinnati, New Orleans
New Orleans & North
Chicago & Eastern Illinois
Chicago, Burlington &
Chicago, Rock Island
Missouri Pacific
Missouri, Kansas & Texas
Wisconsin Central
St. Louis, Iron Mountain
Gulf & Ship Island
Peoria & Pekin Union
Chicago, Milwaukee &
Chicago & Western Indiana
Pere Marquette
Canadian Pacific
Erie
Chicago, Peoria & St.
Lexington & Eastern
Louisville & Nashville
Oregon Short Lines
Kansas City, Mexico
Elgin, Joliet & Eastern
Western Maryland
Southern
Trinity & Brazos River
Atlanta, Birmingham

ures Chicago Bridge & Iron Works

Total Number of Structures 690, Divided as Follows

FOR Municipalities.....	370
Factories and Mills.....	164
Railways.....	88
Asylums and Public Institutions.....	23
Government Properties.....	15
Schools and Colleges.....	12
Private Estates.....	8
Pleasure Resorts.....	4
Power Companies.....	3
Cemeteries.....	2
Nurseries.....	1
	<hr/>
	690

See detail list for location and purchaser.

List of Railways Using Our Steel Tanks

Delaware, Lackawanna & Western.
 Pennsylvania.
 Boston & Maine.
 Pittsburg & Lake Erie.
 Cincinnati, New Orleans & Texas Pacific.
 New Orleans & Northwestern.
 Chicago & Eastern Illinois.
 Chicago, Burlington & Quincy.
 Chicago, Rock Island & Pacific.
 Missouri Pacific.
 Missouri, Kansas & Texas.
 Wisconsin Central.
 St. Louis, Iron Mountain & Southern.
 Gulf & Ship Island.
 Peoria & Pekin Union.
 Chicago, Milwaukee & St. Paul.
 Chicago & Western Indiana.
 Pere Marquette.
 Canadian Pacific.
 Erie.
 Chicago, Peoria & St. Louis.
 Lexington & Eastern.
 Louisville & Nashville.
 Oregon Short Lines.
 Kansas City, Mexico & Orient.
 Elgin, Joliet & Eastern.
 Western Maryland.
 Southern
 Trinity & Brazos River Valley.
 Atlanta, Birmingham and Atlantic.





